



**United States
Department of
Agriculture**

Forest Service

Pacific
Southwest
Region

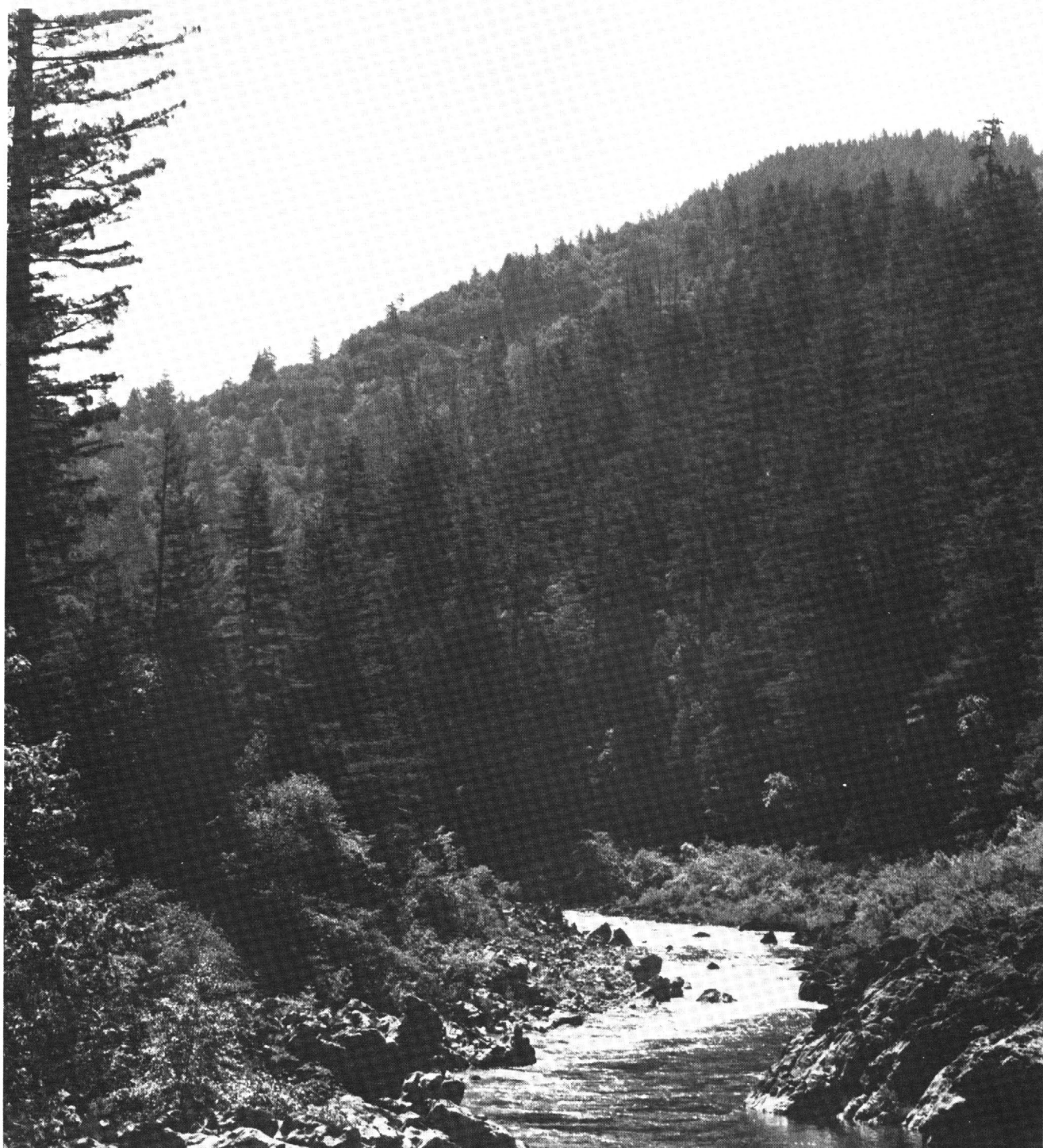
In cooperation with:

U.S.D.A. Soil
Conservation Service

Regents of the
University of California
(Agricultural Experiment
Station)

Soil Survey

Six Rivers National Forest, California



How To Use This Soil Survey

General Soil Map

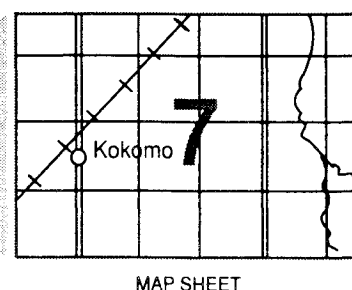
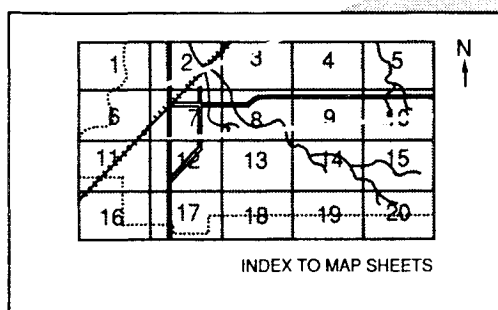
The general soil map, which is the small scale map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

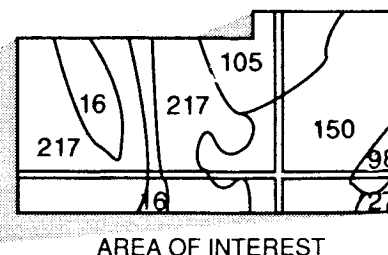
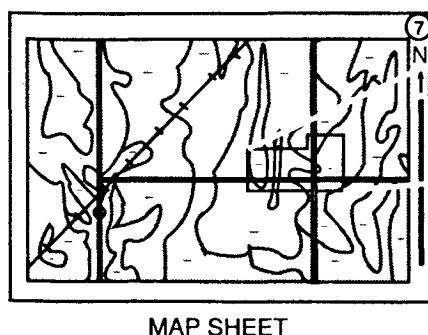
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

Six Rivers National Forest Area, California

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, and state agencies including the The Regents of the University of California (Agricultural Experiment Station). The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. The fieldwork and technical quality control for this survey were conducted by the Forest Service. The correlation of the soils was conducted by the Soil Conservation Service in consultation with the Forest Service. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1979. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979. This survey was made cooperatively by the Soil Conservation Service and the Forest Service. The soil survey area consists of the Six Rivers National Forest.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: This is a view of the Smith River on the Gasquet Ranger District.

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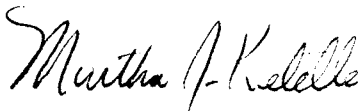
Foreward

Soil Survey of Six Rivers National Forest Area, California, in parts of Humboldt, Del Norte, Siskiyou, and Trinity Counties, was designed to facilitate broad Forest-wide resource management planning and to increase the knowledge of our environment. It contains predictions of soil behavior for selected uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil.

This soil survey has been prepared primarily for Forest Resource Planners and Managers. It is useful for preliminary project planning, for identifying general soil management considerations and for evaluation of more intensive soil survey needs. The mapping scale does not provide sufficient detail for site-specific project planning without further field investigation.

Each kind of soil, with its associated properties, is described in this report. Soil map units are also described and are shown on detailed soil maps in the back of the report. Broad areas of soils are shown on the general soil maps for regional or state-wide use.

This soil survey can be useful in the conservation, improvement and productive use of soils and other resources.



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Soil Survey of Six Rivers National Forest Area, California

Parts of Del Norte, Humboldt, Siskiyou and Trinity Counties

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Earth Environmental Consultants, Inc.: Dean L. Stoneman, T. Scott Gibson and Dellon N. Cox

United States Department of Agriculture, Forest Service in cooperation with United States Department of Agriculture, Soil Conservation Service and The Regents of the University of California (Agricultural Experiment Station)

Introduction and Acknowledgements

How This Survey Was Made

This Order 3 soil survey has followed the directives and guidelines in the Forest Service Manual and Handbooks. It has also followed the concepts, procedures, and guidelines of the National Cooperative Soil Survey as specified in the Soil Survey Manual (13), the National Soils Handbook (15), and the soil classification system as stated in Soil Taxonomy (14).

Soil scientists begin the inventory by collecting, studying, and correlating all the existing data and information concerning the survey area (National Forest) that is related to soil genesis and morphology. This includes lithological, geomorphological, topographical, climatic, vegetative, and existing soil survey data both within and adjoining the survey area.

This data and information was assimilated and trans-

ferred to a single base map of suitable scale and accuracy forming the beginning soil map unit delineations or a schematic map. With the schematic map and aerial photo field sheets (stereo-pair coverage) in hand, the soil scientist made a reconnaissance study of the survey area. At this time, the delineations on the schematic map were checked for accuracy of content and location. The aerial photos were studied stereoscopically and the photo images were compared to the conditions found on the ground to insure that later recognition by photo interpretation would be credible. Lithologic, geomorphic, soil, and vegetative characteristics were recognized and recorded in field notes, on the schematic map, and on aerial photo field sheets.

Using the augmented and corrected schematic map, field notes, and an understanding of how the photo images relate to actual conditions on the ground, the soil scientist delineated map units on the aerial photographs. The map units corresponded to segments of the landscapes having similar landform, vegetative cover, and soils as

determined by a knowledge of ground conditions and by stereoscopic aerial interpretation. These aerial photos with the delineation symbols become the exploratory or preliminary soils map.

With the aerial photo (exploratory soils maps) and a field stereoscope, the soil scientist examined on-the-ground as many delineations of each map unit as was possible, considering the access and time allowed to complete the survey. In this way, each different map unit was examined, studied, and described by aerial photo interpretations and on-the-ground investigation. However, because of the design of the survey, Order 3 in intensity, and the time allotted for its completion, every delineation of each different map unit was not visited and examined on the ground. Those delineations with no easy access were rarely visited other than by aerial photo interpretation. In this way, possibly one-third to one-half of the delineations on the field sheets and maps would not have been entered and examined by an on-the-ground investigation. ***This is one of the main aspects of this survey that limits its reliability. It is one reason that the survey is unsuitable for project planning without field verification.***

As each map unit was visited and examined, individual soils were recognized, studied, described, classified, and enough data was collected to furnish the information needed to make interpretations and predictions concerning the use and management of each soil. ***However, the exact location of each soil was not delineated.*** The map units usually consist of a group of soils that occupy a particular portion of the landscape which has been delineated on the aerial photo field sheets. Depending on the area location and extent of the individual soils that are components of the delineated map unit, a map unit is called a consociation, association or complex of soil components. The soil scientist makes a field and aerial photo examination to estimate the soil component percentage composition of each map unit. These map units do not necessarily consist of similar soils. They consist of geographically associated soils that may be, and usually are, quite different in their characteristics and their suitability for use and management. ***These are other aspects of the survey that limit its reliability and make it unsuitable for project planning without field verification.***

This field examination and study, and the associated correction and refinement of the aerial photo field sheets, produces the Order 3 intensity soil maps called for in this system of survey.

The interpretations and predictions concerning use and

management found in this report are based on the soil scientist's knowledge and understanding of the conditions recognized and measured in the time allotted to this inventory. By classifying the soils, the soil scientist can also, with acceptable reliability, bring information concerning use and management of a particular soil from other survey areas where this same soil occurs and has been recognized and studied. Because of the time allocation for the completion of this survey, these use and management interpretations and predictions should be considered as first or second approximations due to the relatively few examinations and measurements that have been made. ***This is still another aspect of the survey that limits its reliability and makes it unsuitable for project planning without field verification.***

Despite the cautions that have been made in the above paragraphs concerning the use of this survey information for project level planning, it is adequate and reliable for its intended and designed purpose: a base for a forest-wide system of land management planning.

Chronology of Mapping

The original draft of this report was prepared by Soil and Land Use Technology, Inc., under contract number 53-9A47-62 in the period from October through December, 1979. The work was done primarily by Annette M. Parsons, SaLUT Soil Scientist, and by Dr. Ellis G. Knox, SaLUT Executive Officer, under the direction of Scott R. Miles, Forest Service Soil Scientist. Dr. Joel A. Norgren, SaLUT Soil Scientist, prepared the general soil map and provided other technical assistance. Marjorie Rodgers typed the manuscript and performed other secretarial, clerical, and drafting services.

The original draft report was revised twice. The first revision was in May, 1981, by Scott Miles, following the final field review (held March 30-April 3 1981). A second revision was made in December, 1984, by Brent Roath, following the final correlation by the West Technical Service Center, Soil Conservation Service.

This report combines, integrates, and supplements the information presented in the interim reports of eight soil surveys on the Forest, carried out according to the procedure and standards of the Forest Service and the Soil Conservation Service as part of the National Cooperative Soil Survey. The work has been reviewed and correlated by the Soil Conservation Service.

The previous studies are as follows.

1. Orleans Soil Survey, Interim Report.

This work was done in 1961-1963 and covered about 171,000 acres on the Orleans Ranger District. Field work was done by R.E. Rocky and G.L. Anderson of the U.S. Forest Service. Classification and Correlation assistance was provided by K.E. Bradshaw and A.E. Sherrell of the Forest Service, and by R.C. Huff and S.B. Johnson of the Soil Conservation Service. The report was written by R.E. Rocky, K.E. Bradshaw, and A.G. Sherrell.

2. Soil Resource Inventory, Tish Tang Planning Unit, Lower Trinity Ranger District, Six Rivers National Forest.

This survey was done in 1975 and covered approximately 94,000 acres on the Lower Trinity Ranger District. John A. Nesser, Forest Service Soil Scientist, conducted field work and wrote the report, under the supervision of Ken Lanspa, Forest Service Soil Scientist. Forest Service Regional Soil Scientists and the Soil Conservation Service provided classification and correlation assistance.

3. Soil Resource Inventory, Lower Trinity Ranger District, Southern Portion, Six Rivers National Forest.

This survey was done in 1978 and covered about 140,000 acres on the Lower Trinity Ranger District. Field work and report writing were accomplished by Forest Service Soil Scientists Judith L. Weiss, party leader, and Annette M. Parsons, under the supervision of Scott R. Miles, Forest Service Soil Scientist. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

4. Interim Soil Survey, Information on 39,000 Acres, Mad River Ranger District, Six Rivers National Forest.

This work was done in 1977-1978 and covered about 39,000 acres on the Mad River Ranger District. The work, which was done under contract by Earth Environmental Consultants, Inc., consisted of mapping only, and no management interpretations were made. Dean L. Stoneman, EEC president, T. Scott Gibson and Dellon N. Cox, EEC Soil Scientists, accomplished the mapping and the preparation of the report. Scott R. Miles (U.S.F.S.) was the Contracting Officer's Representative. Classification and correlation assistance was provided by Forest Service Regional Scientists.

5. Soil Resource Inventory, Interim Report, Gasquet Ranger District, Northern Portion, Six Rivers National Forest.

This work was done in 1978 and covered approximately 130,000 acres on the Gasquet Ranger District. Judith L. Weiss, party leader, and Annette M. Parsons (U.S.F.S.) conducted the field work and report writing, under the supervision of Scott R. Miles (U.S.F.S.). Field aids also participating were Jack Hubbard, Terry Kramer, Mike Prieto, and Diane Reilly, who were enrollees in the Young Adult Conservation Corps program. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

6. Soil Resource Inventory, Mad River Ranger District, Six Rivers National Forest.

This survey was conducted in 1978-1979 and covered nearly 250,000 acres on the Mad River Ranger District. The work was done under contract by Soil and Land Use Technology, Inc. Dr. Joel A. Norgren, party leader, Annette M. Parsons, and William E. Perkis, SaLUT Soil Scientists, conducted the field work and report writing under the general direction of Dr. Ellis G. Knox, project director. Scott R. Miles (U.S.F.S.) was the Contracting Officer's Representative. Judith L. Weiss (U.S.F.S.) also participated. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

7. Soil Resource Inventory, Gasquet and Orleans Ranger Districts, Six Rivers National Forest.

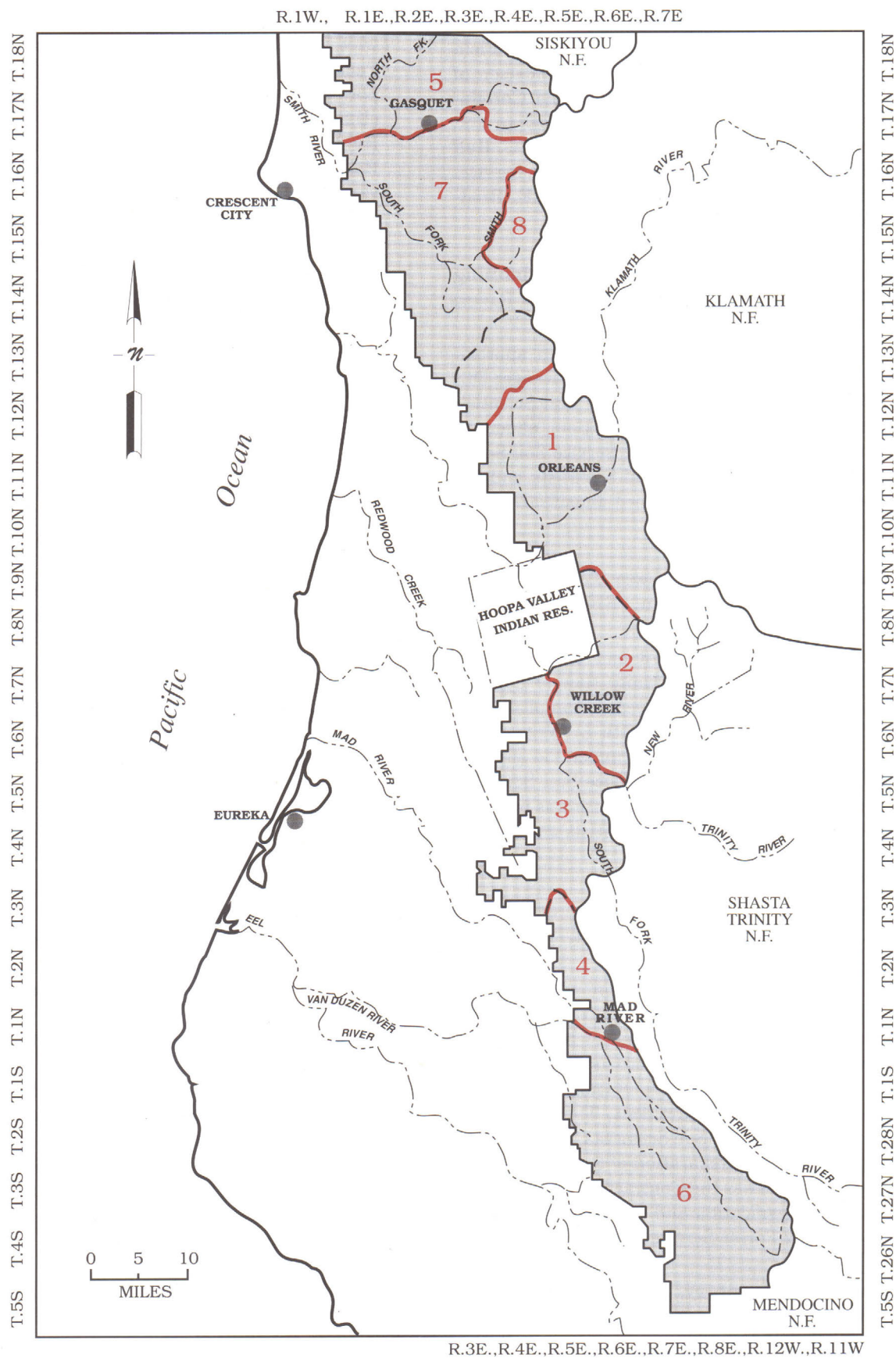
This work was done in 1979 and covered approximately 250,000 acres on the Gasquet and Orleans Ranger Districts. The work was done under contract by Soil and Land Use Technology, Inc. Field work was accomplished by Dr. Joel A. Norgren, party leader, Annette M. Parsons, and William E. Perkis, SaLUT Soil Scientists. The report was compiled by Annette M. Parsons. Scott R. Miles was the Contracting Officer's Representative. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

8. Proposed Siskiyou Wilderness Area, Gasquet Ranger District.

After completion of the previous studies, the mapping was extended into the proposed Siskiyou Wilderness Area by interpretation of stereoscopic aerial photographs. This area totaled about 26,000 acres and completed the soil resource inventory of the Six Rivers National Forest. The work was done by Dr. Joel A. Norgren, SaLUT Soil Scientist.

The location and extent of these eight projects are shown in Figure 1. The numbers on the map correspond to the eight areas described above.

Figure 1. Soil Survey Project Areas, Six Rivers National Forest



Survey Area

General Nature

Survey area 701 is the Six Rivers National Forest located in northwestern California. It is in Humboldt, Del Norte, Trinity, and Siskiyou Counties in the northern California coast range and extends southward from the Oregon border (42 degrees north latitude) about 136 miles almost to 40 degrees north latitude. The Forest ranges from 3 to 20 miles in width from east to west. It is bounded by the Klamath, Shasta-Trinity, and Mendocino National Forests on the east and by private land and the Hoopa Valley Indian Reservation on the west. The Forest is crossed by U.S. Highway 199 and California Highways 96, 299, and 36.

The area of the Forest within the administrative boundary is 1,105,243 acres; 980,285 acres are Forest Service and the rest are privately owned. The Forest consists of four Ranger Districts: Gasquet, Orleans, Lower Trinity, and Mad River. Forest headquarters are in Eureka, California.

Climate

The area of the Six Rivers National Forest has a mediterranean climate with cool, moist winters and warm dry summers. Average January temperature on the Forest ranges from 28 to 40° F, and average July temperature ranges from 64 to 80° F (Oakshott, 1978), with the inland areas of the Forest reaching the extremes of high and low temperatures.

Precipitation is moderately heavy over most of the Forest. It ranges from around 50 to 60 inches on the Mad River and Lower Trinity Ranger Districts, to 100 to over 120 inches in parts of the Orleans and Gasquet Ranger Districts (Figure 2). Roughly 80 percent of the total precipitation falls in the six month period between November and April. Most of the precipitation is from widespread storms of several days duration and relatively moderate intensity. Snow occurs in moderate amounts at elevations of 2,000 feet and up, but only above 4,000 feet does snow remain on the ground for very long. Coastal fog is a significant moisture factor in the westernmost part of the Gasquet Ranger District.

Geomorphology

The Forest is located in parts of the Klamath Mountains and California Coast Ranges Geomorphic Provinces. The general trend of ranges, rock formations, and structures in the Klamath Mountain Province is north-south. The South Fork Mountains, the Trinity Alps, the Salmon

Mountains and the Siskiyou Mountains are individual ranges within this province that occur on or adjacent to the Forest. These mountains have been uplifted relatively rapidly and then deeply dissected, accounting for the ruggedness of the terrain. The higher parts of the mountains have been glaciated.

The California Coast Ranges trend north-northwesterly, roughly parallel to the Sierra Nevadas. The Coast Ranges are dominated by lower, more rounded peaks than the Klamath Mountains, and drainage systems are generally smaller. The Coast Ranges consist of a complex series of small, independent ranges and valleys (Oakshott, 1978).

The lowest elevation on the Six Rivers National Forest is about 400 feet in the Trinity River drainage, on the Lower Trinity Ranger District. It reaches just over 6,500 feet on Bear Mountain in the Siskiyou Mountains of the Gasquet Ranger District.

Topography throughout the Forest is dominated by steep, dissected, timbered mountain slopes ranging between 30 to 80 percent. These are the major timber producing areas. Relatively inextensive areas of flat valley bottoms occur in the flood plains of the larger drainage systems. These areas are agricultural.

The six principal drainage systems on the Six Rivers National Forest, for which the Forest is named are the Eel, Van Duzen, Mad, Trinity, Klamath, and Smith Rivers.

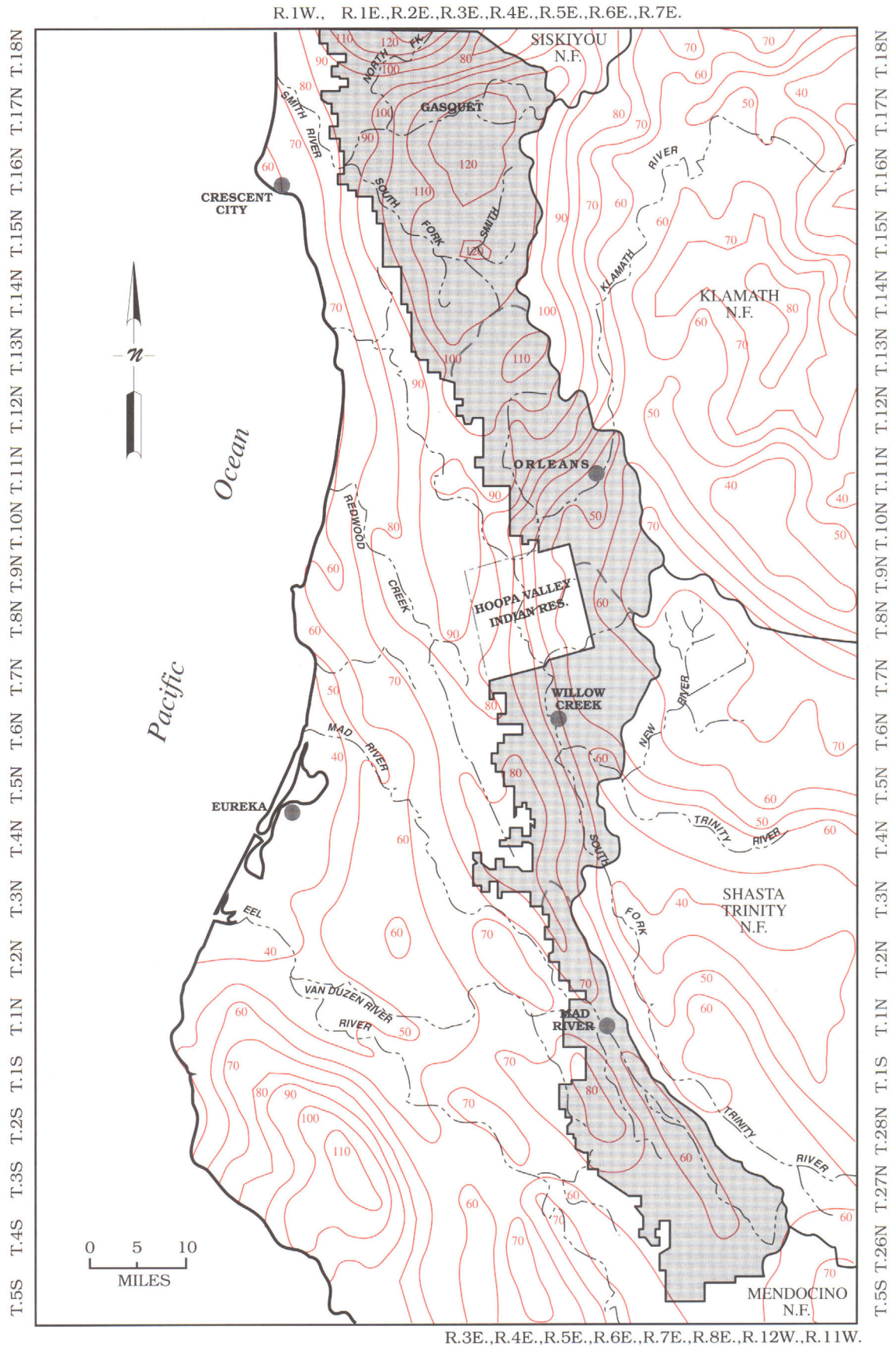
Geology

The rock types occurring on the Forest can be categorized into four major soil-forming groups: (1) Sedimentary and metasedimentary rocks; (2) Metigneous (or Metavolcanic) rocks; (3) Ultrabasic (or Ultramafic) intrusive rocks; and (4) Igneous rocks. The igneous rocks are dominantly acid igneous, but small areas of basic igneous rocks do occur.

The sediments and metasediments are predominantly the Late Jurassic graywacke, shale, schist, and chert of the Franciscan and Dothan Formations, the Upper Jurassic slate, phyllite, and sandstone of the Galice Formation, and Pre-Cretaceous quartzite, metachert, mica schist, and phyllite.

The metigneous (or metavolcanic) rocks are mainly Late Jurassic greenstone and metamorphosed basic igneous rocks of the Franciscan Formation, and Jurassic and/or Triassic metavolcanic rocks of the Galice and Rogue Formations.

Figure 2. Map of Average Annual Precipitation*
Six Rivers National Forest



*Precipitation is given in inches per year.

The ultramafic rocks are Mesozoic ultrabasic intrusives, predominantly serpentinite and serpentized peridotite. On the Gasquet Ranger District these rocks are deeply weathered in many places, and form broad flat ridge tops.

The Igneous rock types on the Forest are predominantly undifferentiated Mesozoic quartz diorite and diorite. Some minor areas of basic igneous rocks such as gabbro occur. These areas of igneous rocks are mostly at high elevations where the batholiths or plutons form the mountains.

Figure 3 presents a general overview of the geologic types on the Forest.

Vegetation

The major plant community on the Forest, and the primary timber producing community, is mixed conifer-hardwoods, consisting largely of Douglas-fir, tanoak, madrone, and some chinquapin, with associated species of brush, such as various species of *Ceanothus*, manzanita, and oaks. These areas are underlain mainly by metasedimentary and metavolcanic rocks. The soils are generally moderately fine textured with varying depth ranges.

Relatively small areas of gladelands occur on the sheared and fractured zones (melange) of the Franciscan Formation. The soils formed from this material are deep, fine-textured soils. These areas are concentrated on the Mad River Ranger District.

At higher elevations, generally above 4,000 feet, white and red fir are the dominate conifers, with an understory of Sadler oak and manzanita. Scattered sugar, ponderosa, and Jeffrey pines also occur, as do some chinquapin. The main rock type at higher elevations is quartz diorite, which produces deep, coarse textured soils.

Large and extensive areas of various species of pines, primarily knobcone and lodgepole, occur in association with sugar, ponderosa, and Jeffery pines. An understory consists of manzanita, huckleberry oak, California coffeeberry, and rhododendron. The most extensive of these areas are on the Gasquet District, where azalea and rhododendron, as well as red and evergreen huckleberry flourish. These areas are underlain by ultrabasic, or ultramafic, intrusive rocks, such as serpentinite and

peridotite. The soils are generally deep and fine textured. The shallower ultramafic soils produce grass.

The dryer, rockier and shallower areas are dominated by such non-commercial plant species as digger pine and live oak. These areas are usually found on the more resistant rocks, and on southerly exposures.

Inextensive areas of redwood-Douglas fir communities occur in the western-most portion of the Gasquet Ranger District, where coastal fog is an important factor governing the moisture regime of the soils. Other associated plant species are tanoak, rhododendron, swordfern, evergreen huckleberry, and alder.

The plant communities named in the mapping unit descriptions are from a vegetation classification system developed for California (Parker and Matayes 1978).

Wildlife

A great diversity of wildlife species inhabit the Six Rivers National Forest. A number of sensitive and endangered species are found here, along with such harvest species as the black-tailed deer, black bear, gray fox, raccoon, gray squirrel, jackrabbit, and quail. Some species, such as the spotted owl, goshawk, and pileated woodpecker depend upon old-growth forest areas for their habitat (U.S.D.A. Forest Service, 1979).

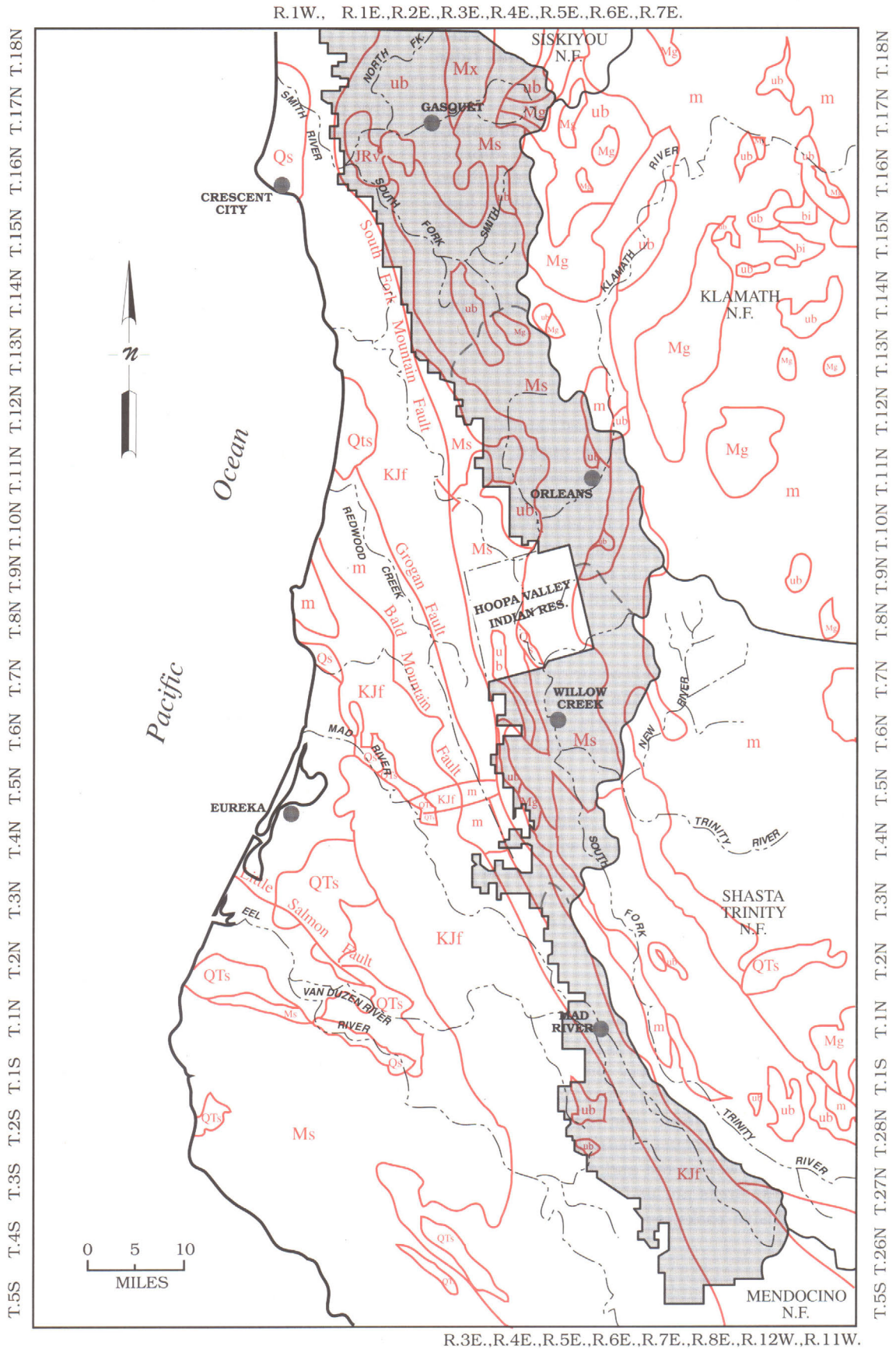
Forest Uses

Timber production is the dominant land use on the Six Rivers National Forest. Watershed, fisheries, and wildlife value are important resources for land use. Recreation, including hunting, fishing, hiking, and offroad vehicle use, is also important. Range use is of significant extent only on the Mad River Ranger District, where areas of grassland produce forage for stock. Mineral resources are concentrated in the areas of ultrabasic intrusive rocks, which are of greatest extent on the Gasquet District.

General Soil Map

An overview of the distribution and qualities of the Forest soils is shown in a general soil map presented for the four Ranger Districts in Figures 4, 5, 6, and 7. The nine general soil areas are outlined and described in Table 1.

Figure 3. Generalized Geology Map, Six Rivers National Forest



Explanation of Figure 3.

Letters indicate generalized geologic units.

Qs	Quaternary sediments
QTs	Quaternary-Tertiary sedimentary rocks
QTV	Quaternary-Tertiary volcanic and intrusive rocks
KJf	Franciscan Formation
m	Pre-Cretaceous metamorphic rock
Jvr	Jura-Trias metavolcanic rocks
Mg	Mesozoic granitic rocks
bi	Mesozoic basic intrusive rocks
Ms	Mesozoic sedimentary rocks
Mx	Mesozoic mixed: Jura-Trias metavolcanic, Mesozoic basic intrusive, Upper Jurassic marine sedimentary, Mesozoic ultra-basic intrusive
ub	Mesozoic ultramafic intrusive rocks

Units bearing a particular geologic designation are generalized and locally contain areas of other rock types too small to show separately.



Approximate contact between map units



Fault, approximately located; definite, inferred, and concealed faults are not differentiated.

Contacts between geologic units are highly generalized and are not precise boundaries.

TABLE 1. General Soil Map Legend.

Map Symbol	General Soil Area	Dominant Mapping Units	Taxonomic Classes Characteristics*	Dominant Vegetation
1	Young alluvial soils	100	Xerofluvents, Riverwash	grass, willows, alder
2	Grass and oak soils	281,236,250	Xerochrepts, Haploxeralfs, Xerumbrepts;f,f-l,l-sk; mesic	grass, oaks
3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
5	Major timber producing soils, >35% slope	212,222,225, 226,237,240, 245,252,260, 265,266,272, 312,324,325, 331,345,346	Haploxeralfs, Haploxerults, Xerochrepts;f-l,l-sk,c-sk,f; mesic	Douglas-fir
6	Major timber producing soils, <35% slope	210,225,261 253	Haploxeralfs, Haploxerults; f,f-l;mesic	Douglas-fir
7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
8	Moister(Udic) soils (redwood may occur)	209,227,228, 241,244,248	Dystrochrepts, Hapludults; l-sk,f-l,f;mesic	redwood, Douglas-fir, alder, huckleberry, rhododendron
9	Igneous soils	360,361,500, 501,503,524,	Xerorthents, Xerochrepts, Xerumbrepts, Haploxeralfs; f-l,co-l,l-sk,s-sk;frigid and mesic	white fir, Douglas-fir

* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 4. GENERAL SOIL MAP:
Gasquet Ranger District
Six Rivers National Forest

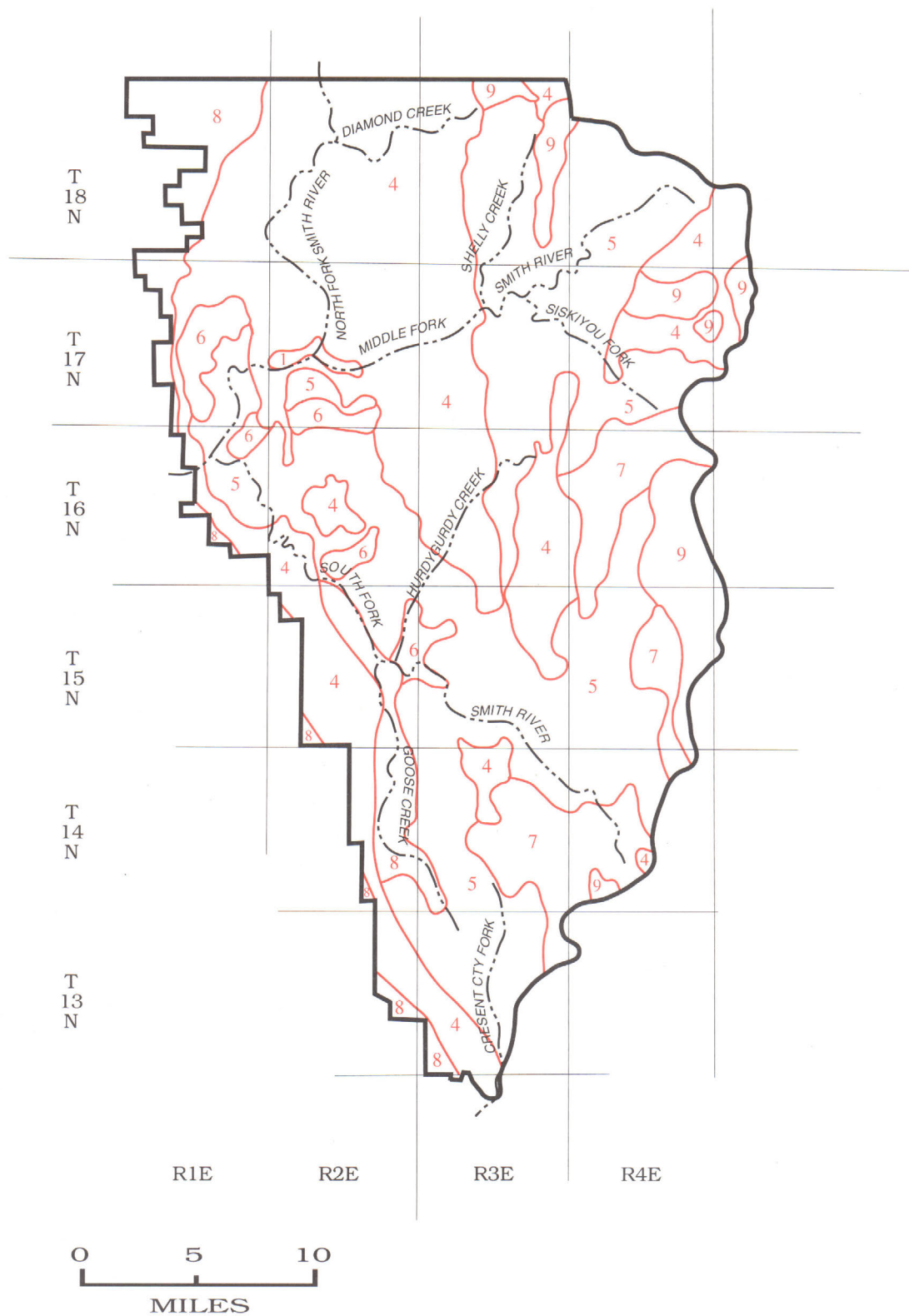


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Map Symbol	General Soil Area	Dominant Mapping Units	Taxonomic Classes Characteristics*	Dominant Vegetation
1	Young alluvial soils	100	Xerofluvents, Riverwash	grass, willows, alder
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3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinitic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
5	Major timber producing soils, >35% slope	212,222,225, 226,237,240, 245,252,260, 265,266,272, 312,324,325, 331,345,346	Haploxeralfs, Haploxerults, Xerochrepts;f-l,l-sk,c-sk,f; mesic	Douglas-fir
6	Major timber producing soils, <35% slope	210,225,261 253	Haploxeralfs, Haploxerults; f,f-l;mesic	Douglas-fir
7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
8	Moister(Udic) soils (redwood may occur)	209,227,228, 241,244,248	Dystrochrepts, Hapludults; l-sk,f-l,f;mesic	redwood, Douglas-fir, alder, huckleberry, rhododendron
9	Igneous soils	360,361,500, 501,503,524,	Xerorthents, Xerochrepts, Xerumbrepts, Haploxeralfs; f-l,co-l,l-sk,s-sk;frigid and mesic	white fir, Douglas-fir

* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 5. GENERAL SOIL MAP:
Orleans Ranger District
Six Rivers National Forest

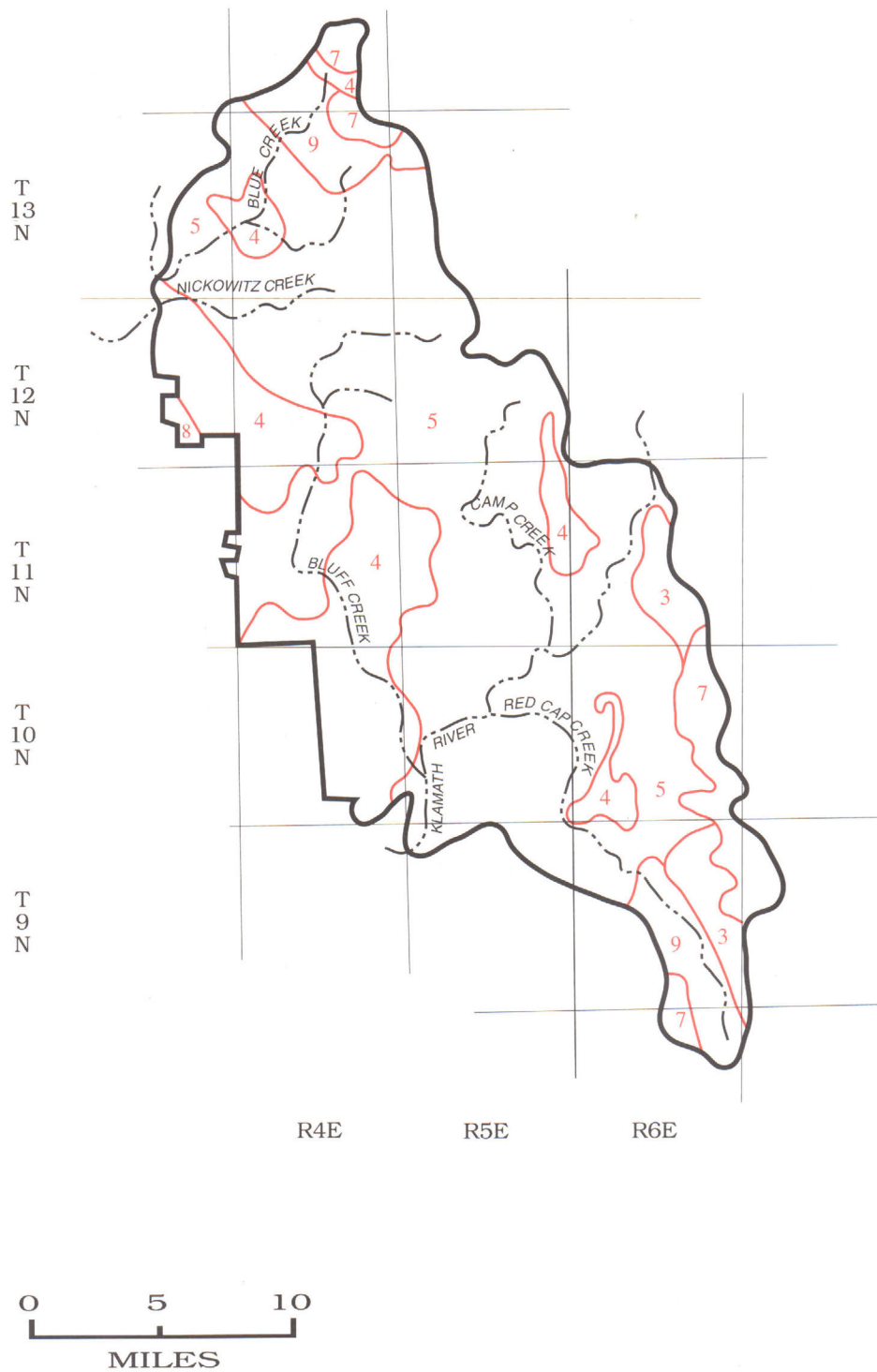


TABLE 1. General Soil Map Legend.

Map Symbol	General Soil Area	Dominant Mapping Units	Taxonomic Classes Characteristics*	Dominant Vegetation
1	Young alluvial soils	100	Xerofluvents, Riverwash	grass, willows, alder
2	Grass and oak soils	281,236,250	Xerochrepts, Haploxeralfs, Xerumbrepts;f,f-l,l-sk; mesic	grass, oaks
3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
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7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
8	Moister(Udic) soils (redwood may occur)	209,227,228, 241,244,248	Dystrochrepts, Hapludults; l-sk,f-l,f;mesic	redwood, Douglas-fir, alder, huckleberry, rhododendron
9	Igneous soils	360,361,500, 501,503,524,	Xerorthents, Xerochrepts, Xerumbrepts, Haploxeralfs; f-l,co-l,l-sk,s-sk;frigid and mesic	white fir, Douglas-fir

* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 6. GENERAL SOIL MAP:
Lower Trinity Ranger District
Six Rivers National Forest

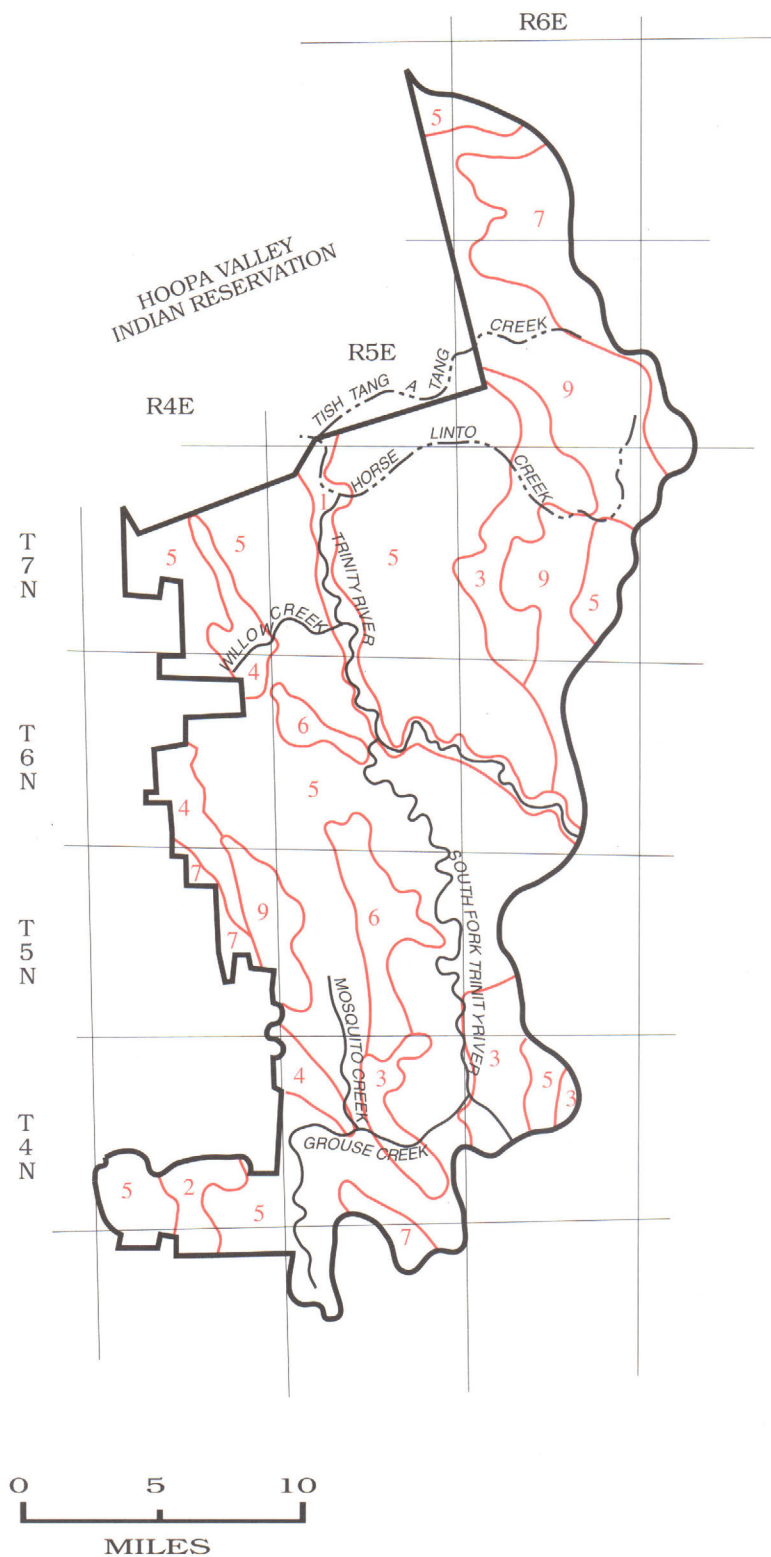
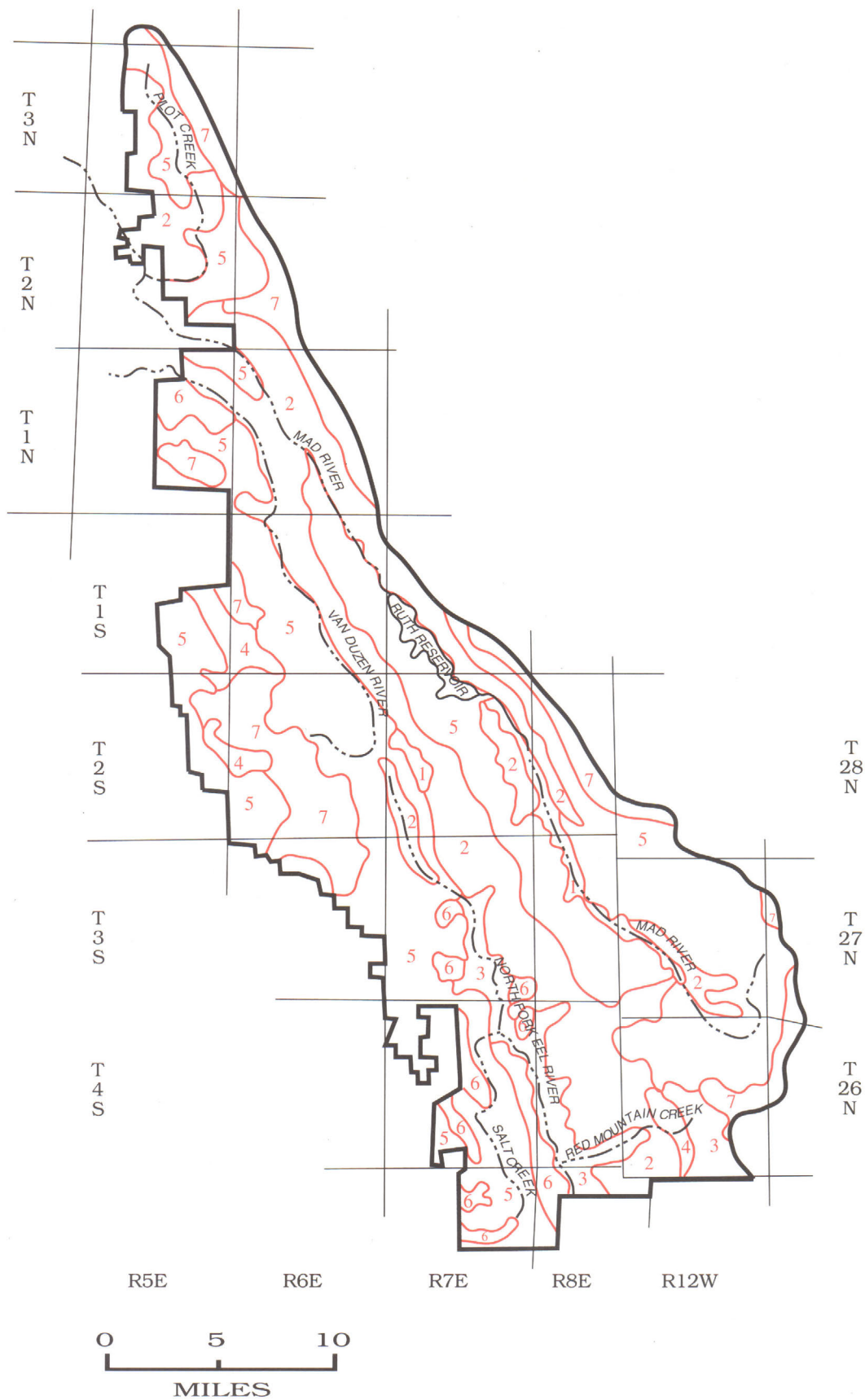


TABLE 1. General Soil Map Legend.

Map Symbol	General Soil Area	Dominant Mapping Units	Taxonomic Classes Characteristics*	Dominant Vegetation
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4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
5	Major timber producing soils, >35% slope	212,222,225, 226,237,240, 245,252,260, 265,266,272, 312,324,325, 331,345,346	Haploxeralfs, Haploxerults, Xerochrepts;f,l,l-sk,c-sk,f; mesic	Douglas-fir
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* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 7. GENERAL SOIL MAP:
Mad River Ranger District
Six Rivers National Forest



Criteria for Soil Management Interpretations

In order for this soil survey to be effectively used the basic soil characteristics described during the survey were interpreted into various management capabilities and limitations such as timber productivity, regeneration potential, and erosion hazard. The following text provides an explanation of the criteria used to make the various management interpretations given in the map unit descriptions.

Soil Erodibility (K-Factor)

Quantitative estimates of soil loss by overland flow of water can be made with the Universal Soil Loss Equation (USLE). This requires a K-factor, which is an index of soil erodibility. The K-factor was determined utilizing Wichmeier's nomograph(J. Soil Water Conservation 26:189-193).

Maximum Erosion Hazard

Many land use activities have the potential to cause erosion rates to exceed natural soil erosion or soil formation rates. Potential consequences of accelerated erosion include reductions in the productive capacity of the soil and adverse effects on water quality. Many interrelated factors are evaluated in an EHR system to determine whether land use activities would cause accelerated erosion, and to what degree accelerated erosion would cause adverse effects. It is designed to appraise the relative risk of accelerated sheet and rill erosion. The system does not rate gully erosion, dry ravel, wind erosion, or mass wasting.

The adjective erosion hazard ratings are described below in terms of the likelihood and consequences of accelerated erosion. As the risk of accelerated erosion increases, so does the likelihood that accelerated erosion will exceed soil formation rates. The risk and consequence becomes especially critical for shallow and moderately deep soils over consolidated materials.

The maximum EHR are based on little or no vegetative cover present and on the long-term average occurrence of 2-year, 6-hour storm events. Erosion hazard risks are greater when storm frequency, intensity and/or duration exceed long-term average occurrence, and risks are less when occurrence is below "average". The risks and consequences for adjective erosion hazard ratings are described below.

Low EHR. Accelerated erosion is not likely to occur, except in the upper part of the Low EHR numerical range,

or during periods of above average storm occurrence. If accelerated erosion does occur, adverse effects on soil productivity and to nearby water quality are not expected. Erosion control measures are usually not needed for these areas.

Moderate EHR. Accelerated erosion is likely to occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality may occur for the upper part of the Moderate EHR numerical range, or during periods of above average storm occurrence. The need for erosion control should be evaluated for these areas. A wide selection of measures and application methods are available.

High EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality are likely to occur, especially during periods of above average storm occurrence. Erosion control is necessary for these areas to prevent accelerated erosion. The selection of measures and methods of application are somewhat limited.

Very high EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity and to nearby water quality are very likely to occur, even during periods of below average storm occurrence. Erosion control is essential for these areas to prevent accelerated erosion. The selection of measures and methods of application are limited.

Soil Profile Permeability

Soil permeability is that quality of the soil that enables it to transmit water or air. The relative ratings are based upon soil structure, texture, porosity, and cracking.

Soil Drainage

This is the natural drainage of a soil that permits the flow of excess water through it. It is affected by soil texture, structure, the pattern of subsurface water movement as affected by slope, slope position and shape, and the rate of water flow to the soil. The following classes are used: very poorly drained, poorly drained, somewhat poorly drained, moderately well drained, well drained, somewhat excessively drained, and excessively drained.

Soil Manageability

Certain features of the land affect the relative ease of management with mechanized equipment. The soil man-

ageability classification rates soils and their topography on the basis of features which reduce the ease of equipment operation and increase required soil protection measures.

Classes of soil manageability are interpretations for individual soil map unit components. Soil map unit manageability *Groups* refer to an entire map unit which can be a consociation, association or complex of one or more soils.

Definitions of soil manageability classes and possible management option modifiers are given below.

Class 1. Easy to manage. Soils in this class are on stable slopes of less than 30 percent. They are moderately deep or deep and do not have any more than slight management problems. No management option modifiers(defined below) apply to this class.

Class 2. Readily manageable. Soils in this class are on slopes of less than 30 percent, but have a moderate management option modification, such as moderate erosion potential.

Class 3. Moderately difficult to manage. Soils in this class are on slopes between 30 to 60 percent, or have a substantial management option modification, or both.

Class 4. Very difficult to manage. Soils in this class are on slopes over 60 percent. They may or may not have other management option modifiers.

The criteria for management option modifiers are as shown in Table 2a. The class symbols are lower case for moderate and upper case for substantial reductions in the ease of management.

Soil Manageability Groups

The soil manageability groups are defined by the soil manageability classes which apply to individual soil components in a soil map unit.

Definition of soil manageability groups:

Group IA. Class 1 components predominates with less than 70% class 2, and less than 10% classes 3 and 4 components by area.

Group I. Class 1 components predominate, with less than 50% class 2, less than 20% class 3, and less than 10% class 4 components by area.

Group II. Class 2 components predominate, with less than 50% class 3 components, and less than 20% class 4 components by area

Group III. Class 3 components predominate, with less than 40% class 4 components by area.

Group IV. Class 4 components predominate, or occupy at least 40% of the map unit area.

Forest Survey Site Class

Timber site productivity ratings for the various soils in this survey are given in Forest Survey Site Class. The original field measurements of site quality was done using the McArdle growth curves (Technical Bulletin No. 201) for Douglas-fir and locally developed site curves for white fir. These values were then converted into Forest Survey Site Class using the table in Forest Service Manual 2490.6-9, R-5 Supplement 232, dated May 1980. The growth rate for each Forest Survey Site Class is given below in cubic feet/acre/year.

1	greater than 225
2	165 to 225
3	120 to 165
4	85 to 120
5	50 to 85
6	20 to 50
7	less than 20

The term NC means not capable of growing commercial conifer species.

Regeneration Potential

The regeneration potential is a relative rating of the potential for survival of bare root seedlings in clearcut areas the first season following planting. Table 2b consists of a number of factors to evaluate this potential. In most cases moisture available to the seedlings is the most critical factor. This is related to available water holdings capacity and aspect. Temperature, as affected by aspect and elevation, is also an important factor, as is fertility, as related to the parent material of the soil. Other factors such as compaction are not rated but would serve to further reduce regeneration success.

Available Water Holding Capacity (AWC) Rating

This is the capacity of a soil to hold water in a form available to plants. This is approximately the moisture content between field capacity and permanent wilting

TABLE 2a. Criteria for Management Option Modifiers

Soil or Topographic Feature	Substantial Criterion	Symbol	Moderate Criterion	Symbol
Slope Gradient	> 60%	G	30- 60%	g
Slope Stability	Low	S	Moderate	s
Maximum Erosion Hazard	High or Very High	E	Moderate	e
Soil Depth	< 10 inches	D	10- 20 inches	d
AWC in Top 20" of Soil	< 1.2 inches	P	1.2- 2.4 inches	p
Wetness	Poorly drained	W	Somewhat poorly drained	w
Rock Outcrop or Surface Boulders	> 15% of land surface	X	3- 15% of surface	x

Table 2b. Regeneration Potential in Clearcut Areas

Factor	High Potential	Rating	Moderate Potential	Rating	Low Potential	Rating	Rating Assigned
AWC§ in top 24 inches	3.2 inches	1-3	3.2-2.0 inches	4-7	2.0 inches	8-11	
Aspect (moisture and temperature)	NW to SE (271° to 134°)	1	SE to W (135° to 270°)	3			
Temperature	Mesic	1	Frigid ~	3			
Nutrient status as related to parent rock	Sedimentary metasedimentary igneous metaigneous	1	Ultramafic	5			

TOTAL _____

Interpretation of Rating Total

Total Rating	Regeneration Potential
4-8	High
9-12	Moderate
13-16	Low
17-22	Very Low

§ AWC = available water holding capacity

~ On frigid soils where treatment leaves adequate shelter for seedlings, rate one category higher.

* From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, southern portion, Six Rivers National Forest.

point. The amount of water a soil can hold depends primarily upon its texture and depth. Gravel, cobbles, and stones do not hold moisture and will therefore reduce the moisture holding capacity of a soil. The ratings* are:

Very Low	0 - 2.5 inches (0 - 6.25 cm)
Low	2.6- 5.0 inches (6.26-12.5 cm)
Moderate	5.1- 7.5 inches (12.6 -18.75 cm)
High	7.6-10.0 inches (18.75-25.0 cm)
Very High	>10.0 inches (>25 cm)

*From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, Southern Portion, Six Rivers National Forest.

Inches of AWC in Top 20 Inches of Soil

This is the estimated available waterholding capacity in the top 20 inches of soil. This value is important for estimating the relative regeneration potential.

Susceptibility to Burning Damage

Soil damage can sometimes occur from burning. The risk of damage increases proportionately with the intensity of heat. The damage is mainly related to the loss of organic matter. Some soils have characteristics which enable them to withstand this loss better than other soils. These characteristics are used to rate the soils for their susceptibility to damage from burning, as expressed in Table 2c. The rating system is intended to be used as a general guideline. Other factors not mentioned may alter the rating.

Hydrologic Soil Group

The hydrologic soil group indicates the soils potential for runoff. Factors considered in determining the hydrologic soil group include structure and texture of surface horizon, permeability of surface horizon, and the depth at which a reduction in permeability begins. The group are classified as follows:

- Group A - very low runoff potential
- Group B - low runoff potential
- Group C - moderate runoff potential
- Group D - high runoff potential

Unified Soil Classification

The Unified Soil Classification system was established by the U.S. Army Corps of Engineers. It is based on the identification of soils according to their texture and plasticity, and on their performance as engineering construction materials. The Unified Soil Classification ratings assigned in this report were developed from field estimates of the U.S.D.A. textures and are intended as general guides. The actual Unified Soil Classification ratings may vary.

Potential Failure as Road Subgrade

Soils are identified according to the potential failure due to traffic loading. Groupings are based on a generalized classification which is intended to identify potential problem soils that will probably require intensive soil sampling and testing.

The three potential failure ratings and their characteristics are as follows:

1. **Yes** - Poor bearing capacity: soils are rich in inorganic clays of moderate to high plasticity, elastic silts and clays, or compressible organic silts. Sampling and testing are recommended for structural sections. Soils in this group include CL, OL, MH, CH, and OH (Unified Soil Classification System; see above for explanation).
2. **Possible** - Uncertain bearing capacity: sampling and testing are recommended.
3. **No** - Adequate bearing capacity: soils typically have sufficient bearing capacity for a minimal structural section on low volume local roads. Sampling and testing recommended for Arterial and Collector roads.

Seeding Recommendations

Seeding recommendations were developed from information regarding the soil profile, soil temperature and moisture regimes, elevation, and soil fertility. Species selection adapted from U.S.D.A., Soil Conservation Service (1976).

Three recommendations were developed and are shown in Table 2d.

TABLE 2c. Susceptibility to Burning Damage

Factor	Low Susceptibility	Rating	Moderate Susceptibility	Rating	High Susceptibility	Rating	Rating Assigned
Organic Matter in top 4"	>1%	1			<1%	2	
Coarse Frag- ments in top 4"	<35%	1	35-65%	2	>65%	5	
Texture in top 4"	scl, cl, sicl, sc, sic, c	1	l, sil, si	2	s, ls, sl	3	
Parent Rock	sediments, metasediments, basic igneous, metaigneous	2	Fault gouge	5	acid igneous, ultramafic	7	
Slope %	0-35%	1	35-70%	2	>70%	3	

TOTAL _____

Interpretation of Rating Total

Total Rating	Susceptibility to Burning Damage §
6-9	Low
10-14	Moderate
15-20	High

§ Rate soils predominantly on SE to W aspects one category higher.

* From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, southern portion, Six Rivers National Forest.

TABLE 2d. Seeding Recommendations**1. General Forest Soils***

Vegetation Type	Pounds/Acre	Seeds/Feet ²
Agropyron trichophorum "Luna" (Luna pubescent wheatgrass)	15	24
Dactylis glomerata (Palestine orchardgrass)	6	50
Trifolium hirtum (Rose clover)	10	22
Lolium rigidum "Wimmera 62" (Wimmera 62 ryegrass)	15	52
Pea ampla "Sherman" (Sherman big bluegrass)	2	26
TOTAL	48	174

2. Ultrabasic and Dioritic Soils*

Vegetation Type	Pounds/Acre	Seeds/Feet ²
Bromus mollis "Blando" (Blando brome)	5	24
Viscia dasycarpa "Lana" (Lana vetch)	80	16
Trifolium hirtum (Rose clover)	10	22
Lolium rigidum "Wimmera 62" (Wimmera 62 ryegrass)	20	70
Agropyron trichophorum "Luna" (Luna pubescent wheatgrass)	10	16
TOTAL	125	148

3. Frigid or Udic Soils*

Vegetation Type	Pounds/Acre	Seeds/Feet ²
Dactylus glomerata "Palestine" (Palestine orchardgrass)	5	42
Secale cereale (Cereal rye)	60	20
Trifolium incarnatum (Crimson clover)	4	11
Lotus corniculatus "Cascade" (Broadleaf trefoil)	2	18
Agropyron trichophorum "Luna" (Luna pubescent wheatgrass)	20	32
TOTAL	91	123

§ Recommendations developed by Scott R. Miles, Soil Scientist, Six Rivers National Forest

* Seeded with 400 lbs/acre of 16-20-0 plus 1500 lbs/acre of wood fiber mulch.

The above species are not native to Six Rivers National Forest. If native species can be used, they should be used. For information on the utilization of natives and lists of appropriate species for this forest please refer to "A Study of Plant Materials Suitable for Use in Watershed and Wildlife Habitat Improvement in the Trinity River Watershed, California" by Matthews, Furniss and Leskiw.

Soil Map Units

Identification and Extent

The map units of the Order 3 soil survey are delineated and identified by numerical map symbols on aerial photographs (not included in this report). The Forest Service has transferred this mapping to 7 1/2 minute quadrangle sheet overlays at a scale of 1:24,000. A reduced copy of these maps (1:63,360) are provided at the end of this report.

Each map symbol identifies a soil map unit composed of one, two, or three major soil (or land type) components. Components of compound mapping units are associated in a more or less consistent geographic pattern on the landscape. The names of map units designate the major components. Map symbols and map unit names are equated in the map unit legend. Tables 3 and 4 present the map unit legend in numerical and alphabetical order, respectively.

The approximate area of each map unit was measured on the aerial photograph field sheets by counting dots on transparent overlays. The areas and proportionate extent of map units are given in Tables 3 and 4.

The 1966 Orleans Ranger District Soil Survey was made before a unified identification legend was established for the Forest. Symbols shown on the field sheets are different from the symbols listed in Tables 3 and 4. A conversion legend is presented in Table 5.

Soil Map Unit Descriptions and Management Interpretations

Soil map unit descriptions including interpretations for management are given in this section following Table 5.

The criteria used to make the soil management interpretations is presented in the section beginning on page 18.

TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical

MAP SYMBOL	MAPPING UNIT NAME	SUR-VEY AREA %	APPROX. ACREAGE
100	Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes	1.23	13,550
102	Pits and Dumps	.03	280
103	Xerochrepts-Haploxerults complex, 30 to 70 percent slopes	.45	4,950
125	Horseshoe family, deep, 10 to 40 percent slopes	.14	1,580
200	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes		Combined with 300
209	Hartleton-Elioak-Chenango families association, deep, 20 to 50 percent slopes	.07	800
210	Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes	.93	10,250
211	Clallam family, moderately deep, 30 to 50 percent slopes	.03	320
212	Clallam family, moderately deep, 50 to 70 percent slopes	2.50	27,580
213	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes		Combined with 214
214	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes	.07	800
215	Clallam family, moderately deep, unstable, 50 to 70 percent slopes	.75	9,150
216	Clallam family, moderately deep, unstable, 50 to 70 percent slopes		Combined with 215
220	Hult-Coyata-Clallam families association, deep, 35 to 70 percent slopes	.34	3,700
221	Hult-Coyata-Clallam families association, deep, dry, 35 to 70 percent slopes	.38	4,140
222	Goldridge family, deep, 30 to 50 percent slopes	.29	4,100
223	Goldridge family, deep, 50 to 70 percent slopes	.11	1,120
224	Goldridge family, deep, 30 to 50 percent slopes		Combined with 222
225	Goldridge-Kistirn-Aiken families association, deep, 5 to 70 percent slopes	1.57	17,290
226	Kistirn-Goldridge families, deep-Deadwood family association, 30 to 70 percent slopes	1.98	21,830
227	Elioak-Hartleton-Aiken families association, deep, 15 to 50 percent slopes	.27	2,930
228	Hartleton-Elioak families, deep-Holyoke family association, 30 to 70 percent slopes	.10	1,070
230	Skalan-Goldridge families complex, deep, 20 to 65 percent slopes	.54	6,020
231	Goldridge family, deep, 15 to 30 percent slopes	.16	1,770
232	Skalan-Hugo families association, deep, 25 to 65 percent slopes	.17	1,890
235	Skalan family, moderately deep, 25 to 70 percent slopes	.06	710
236	Doty-Hecker families association, deep, 25 to 70 percent slopes	2.07	22,890
237	Clallam family, moderately deep, unstable-Melbourne family, deep association, 35 to 70 percent slopes	1.57	17,950
238	Melbourne-Soulajule families association, deep, 5 to 35 percent slopes	.59	6,530

TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical (continued)

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
240	Hugo family, deep-Clallam family, moderately deep association, 25 to 70 percent slopes	1.11	12,200
241	Skinner-Chenango families association, deep, 25 to 70 percent slopes	.15	1,700
242	Maymen family-Clallam family, moderately deep, unstable association, 35 to 90 percent slopes	.34	3,720
243	Maymen family-Rock outcrop, metasedimentary complex, 60 to 80 percent slopes	.16	1,720
244	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes	.20	2,280
245	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes	6.62	73,990
246	Clallam family, moderately deep-Maymen family association, 45 to 80 percent slopes	2.33	25,660
247	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes		Combined with 245
248	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes		Combined with 244
250	Oxalis-Hecker-Doty families association, deep, 25 to 70 percent slopes	1.15	12,660
252	Melbourne-Holland families association, deep, 35 to 70 percent slopes	3.24	35,690
253	Melbourne-Holland families association, deep, 5 to 35 percent slopes	.33	3,660
254	Deadwood-Skymor families association, 35 to 70 percent slopes	.62	6,870
256	Hecker family, deep, 35 to 70 percent slopes	1.34	14,820
257	Bins-Nanny families, deep-Woodseye family association, 5 to 35 percent slopes	1.14	12,580
258	Albus-Race families association, deep, 35 to 70 percent slopes	.96	10,550
259	Nanny family, deep-Woodseye family-Bins family, deep association, 35 to 70 percent slopes	2.92	32,250
260	Skalan-Kistirn-Holland families association, deep, 35 to 70 percent slopes	6.68	74,743
261	Holland-Goldridge families association, deep, 5 to 35 percent slopes	1.5	16,760
265	Clallam-Hugo-Holland families association, deep, dry, 35 to 70 percent slopes	4.70	51,810
266	Clallam-Hugo-Holland families association, deep, 35 to 70 percent slopes	3.52	38,800
271	Hugo family, moderately deep, 30 to 50 percent slopes	.45	4,970
272	Hugo family, moderately deep, 50 to 70 percent slopes	4.63	51,040
273	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
274	Hugo family, moderately deep-Rock outcrop, metasedimentary complex, 50 to 70 percent slopes	.79	8,690
280	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes	3.04	33,590

**TABLE 3. Map Unit Legend, Area Percent, and Acreage,
Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SUR- VEY AREA %	APPROX. ACREAGE
281	Clallam family, deep, extremely gravelly-Deadwood family association, 35 to 75 percent slopes	2.00	22,010
282	Deadwood family-Rock outcrop, metasedimentary-Voorhies family, moderately deep association, 40 to 85 percent slopes	1.16	12,770
300	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes	1.19	13,110
301	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes		Combined with 300
311	Holland family, deep, 30 to 50 percent slopes		Combined with 312
312	Holland family, deep, 30 to 50 percent slopes	.39	4,310
315	Aiken-Holland families complex, deep, 10 to 40 percent slopes		Combined with 316
316	Aiken-Holland families complex, deep, 10 to 40 percent slopes	.10	1,150
317	Nanny family, moderately deep, 50 to 70 percent slopes	.30	3,000
318	Nanny family, moderately deep, 50 to 70 percent slopes		Combined with 317
320	Hugo family, moderately deep-Maymen family complex, 30 to 50 percent slopes	.14	1,590
321	Hugo family, moderately deep-Maymen family complex, 50 to 70 percent slopes	1.05	11,550
322	Maymen family-Rock outcrop, metaigneous complex, 70 to 90 percent slopes		Combined with 323
323	Maymen family-Rock outcrop, metaigneous complex, 70 to 90 percent slopes	.71	7,840
324	Hugo family, deep, 30 to 50 percent slopes	.29	3,220
325	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
326	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
327	Hugo family, moderately deep-Holland family, deep complex, 30 to 50 percent slopes	.10	1,110
331	Clallam family, moderately deep-Skalan family, deep association, 35 to 75 percent slopes	.40	4,420
335	Althouse-Holland families association, deep, stony, 30 to 70 percent slopes	.27	3,060
336	Clallam-Nanny families association, deep, 30 to 60 percent slopes	.34	3,810
340	Clallam family, moderately deep-Rock outcrop, metaigneous complex, 45 to 80 percent slopes	.13	1,380
344	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes		Combined with 280
345	Clallam family, extremely gravelly-Skalan-Goldridge families, association, deep, 35 to 70 percent slopes	2.25	24,840
346	Goldridge family, deep-Clallam family, moderately deep-Aiken family, deep association, 40 to 90 percent slopes	1.03	11,360
348	Skalan-Aiken families association, deep, 5 to 40 percent slopes	.53	5,880
349	Goldridge-Aiken families association, deep, 5 to 40 percent slopes	.53	5,860
351	Skalan-Holland families association, deep, 20 to 65 percent slopes	.10	1,110

**TABLE 3. Map Unit Legend, Area Percent, and Acreage,
Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SUR- VEY AREA %	APPROX. ACREAGE
356	Raisio-Clallam families complex, moderately deep, 45 to 75 percent slopes	.17	1,840
360	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes		Combined with 361
361	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes	.63	7,010
362	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes		Combined with 361
400	Rock outcrop-Rubble land association, ultramafic, 30 to 90 percent slopes	.37	4,110
401	Lithic Haploxerals, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes		Combined with 402
402	Lithic Haploxerals, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes	.21	2,340
403	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerals, ultramafic complex, 30 to 50 percent slopes	1.15	12,710
404	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerals, ultramafic complex, 50 to 70 percent slopes	1.33	14,630
405	Oragran family-Lithic Haploxerals, ultramafic-Rock outcrop, ultramafic complex, 50 to 70 percent slopes	.61	6,730
409	Althouse family, moderately deep-Skymor family, ultramafic association, 35 to 75 percent slopes	.10	1,090
411	Hungry family, deep, 35 to 70 percent slopes	.54	5,970
412	Madden family, moderately deep, 20 to 50 percent slopes	.52	5,800
420	Gasquet-Walnett families, deep, stony-Jayel family, moderately deep association, 10 to 50 percent slopes	2.56	27,870
425	Lithic Haploxerals, ultramafic-Walnett family, deep, stony association, 25 to 70 percent slopes	.82	9,080
430	Jayel family, moderately deep-Walnett family, deep-Lithic Xerochrepts, ultramafic association, stony, 35 to 75 percent slopes	5.08	56,050
431	Jayel family, moderately deep, stony-Walnett family, deep, stony-Oragran family complex, 5 to 35 percent slopes	1.74	19,250
500	Rock outcrop, dioritic	.81	8,950
501	Rock outcrop-Maymen family complex, dioritic, 50 to 90 percent slopes	.62	6,810
503	Rock outcrop, dioritic-Wapal family, moderately deep association, 45 to 75 percent slopes	.61	6,770
515	Chaix family, moderately deep, 50 to 70 percent slopes	.14	1,510
517	Chaix family, moderately deep-Rock outcrop, dioritic complex, 70 to 90 percent slopes	.11	1,170
520	Chaix family, moderately deep, 30 to 50 percent slopes	.20	2,230
522	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes	.37	4,170
524	Deadman-Rogue families association, deep, 20 to 70 percent slopes	.70	7,720
525	Nanny family, deep, dioritic-Althouse family, deep, stony association 30 to 70 percent slopes	1.15	12,640

TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical (continued)

MAP SYMBOL	MAPPING UNIT NAME	SUR-VEY AREA %	APPROX. ACREAGE
530	Maymen family, dioritic, 45 to 70 percent slopes	.54	5,940
535	Deadman family, moderately deep, 0 to 30 percent slopes	.06	650
540	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes		Combined with 522
550	Wapal family, moderately deep, 35 to 65 percent slopes	.25	2,780
552	Wapal family, moderately deep-Deadman family, deep complex, 35 to 65 percent slopes	.57	6,310
554	Wapal family, moderately deep-Hugo family, deep, dioritic association, 20 to 65 percent slopes	.26	2,900
560	Hugo family, deep, dioritic, 15 to 35 percent slopes	.26	2,880
—	Wet meadow (each symbol represents 10 acres)		
		100.00	1,105,243

Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical

MAP SYMBOL	MAPPING UNIT NAME	SUR-VEY AREA%	APPROX. ACREAGE
316	Aiken-Holland families complex, deep, 10 to 40 percent slopes	.10	1,150
258	Albus-Race families association, deep, 35 to 70 percent slopes	.96	10,550
335	Althouse-Holland families association, deep, stony, 30 to 70 percent slopes	.27	3,060
409	Althouse family, moderately deep-Skymor family, ultramafic association, 35 to 75 percent slopes	.10	1,090
257	Bins-Nanny families, deep-Woodseye family association, 5 to 35 percent slopes	1.14	12,580
520	Chaix family, moderately deep, 30 to 50 percent slopes	.20	2,230
515	Chaix family, moderately deep, 50 to 70 percent slopes	.14	1,510
522	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes	.37	4,170
517	Chaix family, moderately deep-Rock outcrop, dioritic complex, 70 to 90 percent slopes	.11	1,170
244	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes	.20	2,280
211	Clallam family, moderately deep, 30 to 50 percent slopes	.03	320
212	Clallam family, moderately deep, 50 to 70 percent slopes	2.50	27,580
215	Clallam family, moderately deep, unstable, 50 to 70 percent slopes	.75	9,150
281	Clallam family, deep, extremely gravelly-Deadwood family association, 35 to 75 percent slopes	2.00	22,010
266	Clallam-Hugo-Holland families association, deep, 35 to 70 percent slopes	3.52	38,800
265	Clallam-Hugo-Holland families association, deep, dry, 35 to 70 percent slopes	4.70	51,810
245	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes	6.62	73,990
246	Clallam family, moderately deep-Maymen family association, 45 to 80 percent slopes	2.33	25,660
237	Clallam family, moderately deep, unstable-Melbourne family, deep association, 35 to 70 percent slopes	1.57	17,330
336	Clallam-Nanny families association, deep, 30 to 60 percent slopes	.34	3,810
340	Clallam family, moderately deep-Rock outcrop, metaigneous complex, 45 to 80 percent slopes	.13	1,380
214	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes	.07	800
331	Clallam family, moderately deep-Skalan family, deep association, 35 to 75 percent slopes	.40	4,420
345	Clallam family, extremely gravelly-Skalan-Goldridge families, association, deep, 35 to 70 percent slopes	2.25	24,840
535	Deadman family, moderately deep, 0 to 30 percent slopes	.06	650
524	Deadman-Rogue families association, deep, 20 to 70 percent slopes	.70	7,720
280	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes	3.04	33,590

Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)

MAP SYMBOL	MAPPING UNIT NAME	SUR-VEY AREA%	APPROX. ACREAGE
282	Deadwood family-Rock outcrop, metasedimentary-Voorhies family, moderately deep association, 40 to 85 percent slopes	1.16	12,770
254	Deadwood-Skymor families association, 35 to 70 percent slopes	.62	6,870
236	Doty-Hecker families association, deep, 25 to 70 percent slopes	2.07	22,890
227	Elioak-Hartleton-Aiken families association, deep, 15 to 50 percent slopes	.27	2,930
420	Gasquet-Walnett families, deep, stony-Jayel family, moderately deep association, 10 to 50 percent slopes	2.56	27,870
231	Goldridge family, deep, 15 to 30 percent slopes	.16	1,770
222	Goldridge family, deep, 30 to 50 percent slopes	.29	4,100
223	Goldridge family, deep, 50 to 70 percent slopes	.11	1,120
349	Goldridge-Aiken families association, deep, 5 to 40 percent slopes	.53	5,860
346	Goldridge family, deep-Clallam family, moderately deep-Aiken family, deep association, 40 to 90 percent slopes	1.03	11,360
225	Goldridge-Kistirn-Aiken families association, deep, 5 to 70 percent slopes	1.57	17,290
209	Hartleton-Elioak-Chenango families association, deep, 20 to 50 percent slopes	.07	800
228	Hartleton-Elioak families, deep-Holyoke family association, 30 to 70 percent slopes	.10	1,070
256	Hecker family, deep, 35 to 70 percent slopes	1.34	14,820
312	Holland family, deep, 30 to 50 percent slopes	.39	4,310
361	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes	.63	7,010
261	Holland-Goldridge families association, deep, 5 to 35 percent slopes	1.52	16,760
125	Horseshoe family, deep, 10 to 40 percent slopes	.14	1,580
324	Hugo family, deep, 30 to 50 percent slopes	.29	3,220
240	Hugo family, deep-Clallam family, moderately deep association, 25 to 70 percent slopes	1.11	12,200
560	Hugo family, deep, dioritic, 15 to 35 percent slopes	.26	2,880
271	Hugo family, moderately deep, 30 to 50 percent slopes	.45	4,970
272	Hugo family, moderately deep, 50 to 70 percent slopes	4.63	51,040
327	Hugo family, moderately deep-Holland family, deep complex, 30 to 50 percent slopes	.10	1,110
320	Hugo family, moderately deep-Maymen family complex, 30 to 50 percent slopes	.14	1,590
321	Hugo family, moderately deep-Maymen family, complex, 50 to 70 percent slopes	1.05	11,550
274	Hugo family, moderately deep-Rock outcrop, metasedimentary complex, 50 to 70 percent slopes	.79	8,690
220	Hullt-Coyata-Clallam families association, deep, 35 to 70 percent slopes	.34	3,700

Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA%	APPROX. ACREAGE
221	Hullt-Coyata-Clallam families association, deep, dry, 35 to 70 percent slopes	.38	4,140
411	Hungry family, deep, 35 to 70 percent slopes	.54	5,970
431	Jayel family, moderately deep, stony-Walnett family, deep, stony-Oragran family complex, 5 to 35 percent slopes	1.74	19,250
430	Jayel family, moderately deep-Walnett family, deep-Lithic Xerochrepts, ultramafic association, stony, 35 to 75 percent slopes	5.08	56,050
226	Kistirn-Goldridge families, deep-Deadwood family association, 30 to 70 percent slopes	1.98	21,830
# (101)	Landflow		
	Landslide (each symbol represents 20 acres)		
402	Lithic Haploxerafs, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes	.21	2,340
425	Lithic Haploxerafs, ultramafic-Walnett family, deep, stony association, 25 to 70 percent slopes	.82	9,080
412	Madden family, moderately deep, 20 to 50 percent slopes	.52	5,800
530	Maymen family, dioritic, 45 to 70 percent slopes	.54	5,940
242	Maymen family-Clallam family, moderately deep, unstable association, 35 to 90 percent slopes	.34	3,710
323	Maymen family-Rock outcrop, metagneous complex, 70 to 90 percent slopes	.71	7,840
243	Maymen family-Rock outcrop, metasedimentary complex, 60 to 80 percent slopes	.16	1,720
253	Melbourne-Holland families association, deep, 5 to 35 percent slopes	.33	3,660
252	Melbourne-Holland families association, deep, 35 to 70 percent slopes	3.24	35,680
238	Melbourne-Soulajule families association, deep, 5 to 35 percent slopes	.59	6,530
317	Nanny family, moderately deep, 50 to 70 percent slopes	.30	3,000
525	Nanny family, deep, dioritic-Althouse family, deep, stony association, 30 to 70 percent slopes	1.15	12,640
259	Nanny family, deep-Woodsey family-Bins family, deep association, 35 to 70 percent slopes	2.92	32,250
405	Oragran family-Lithic Haploxerafs, ultramafic-Rock outcrop, ultramafic complex, 50 to 70 percent slopes	.61	6,730
403	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerafs, ultramafic complex, 30 to 50 percent slopes	1.15	12,710
404	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerafs, ultramafic complex, 50 to 70 percent slopes	1.33	14,630
250	Oxalis-Hecker-Doty families association, deep, 25 to 70 percent slopes	1.15	12,660
102	Pits-Dump association	.03	280
356	Raisio-Clallam families complex, moderately deep, 45 to 75 percent slopes	.17	1,840
500	Rock outcrop, dioritic	.81	8,950

Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)

MAP SYMBOL	MAPPING UNIT NAME	SUR-VEY AREA%	APPROX. ACREAGE
300	Rock outcrop-Lithic Xerorothents complex, metaigneous, 60 to 90 percent slopes	1.19	13,110
501	Rock outcrop-Maymen family complex, dioritic, 50 to 90 percent slopes	.62	6,810
400	Rock outcrop-Rubble land association, ultramafic, 30 to 90 percent slopes	.37	4,110
503	Rock outcrop, dioritic-Wapal family, moderately deep association, 45 to 75 percent slopes	.61	6,770
235	Skalan family, moderately deep, 25 to 70 percent slopes	.06	710
348	Skalan-Aiken families association, deep, 5 to 40 percent slopes	.53	5,880
230	Skalan-Goldridge families complex, deep, 20 to 65 percent slopes	.54	6,020
210	Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes	.93	10,250
351	Skalan-Holland families association, deep, 20 to 65 percent slopes	.10	1,110
232	Skalan-Hugo families association, deep, 25 to 65 percent slopes	.17	1,890
260	Skalan-Kistirn-Holland families association, deep, 35 to 70 percent slopes	6.68	74,743
241	Skinner-Chenango families association, deep, 25 to 70 percent slopes	.15	1,700
100	Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes	1.23	13,550
550	Wapal family, moderately deep, 35 to 65 percent slopes	.25	2,780
552	Wapal family, moderately deep-Deadman family, deep complex, 35 to 65 percent slopes	.57	6,310
554	Wapal family, moderately deep-Hugo family, deep, dioritic association 20 to 65 percent slopes	.26	2,900
—	Wet meadow (each symbol represents 10 acres)		
103	Xerochrepts-Haploxerults complex, 30 to 70 percent slopes	100.00	4,950
		100.00	1,105,243

TABLE 5. Conversion Legend for 1966 Orleans Soil Survey Report.

Orleans 1966 Map Symbol	1980 Report Map Symbol	Orleans 1966 Map Symbol	1980 Report Map Symbol
200W	—	728/3-3	272
400	100	728/3-4	272
700(AR)	500	728 7118 3-2 4-2	327
700(BK)	500	812m/2-3	271
700(BK)R	500	812m/3-3	272
700(BR)	500	812m/3-4	273
700(DF)	# (101)	812m/2R-3	274
700(DH)	102	815m/5-2	222
700(DP)	102	815m/5-3	223
700(DS)		815m/4-2	222
700(DW)	100	815m/2-2	211
700(DZ)	103	820/2-3	212
700(MR)	300	820/2-4	214
700(UR)	400	820/2R-4	214
711/5-1	315	820/2-3M	215
711 7118 5-1 4-2	316	820/2-4M	215
726 724 2-2 4-2	402	926/5-2	125
726 724 2-3 4-2	402	7111/3-1	535
726 7137 2-2 2-2	403	7118/4-1	312
726 7137 2-3 2-3	404	7118/4-2	312
726 7137 2R-3 2R-3	405	7123/4-2	317
728/2-2	320	7129/2R-3	317
728/2-3	321	7129/2-3	515
728/2R-3	323	7129/1R-4	517
728/2R-4	323	7129/2R-4	517
728/3-2	324		

**100 Typic Xerofluvents-Riverwash association
2 to 10 percent slopes**

Map Unit Components

Approx. Proportion

Position, Slope, and
Elevation

Typical Vegetation

Typic Xerofluvents

(40%)

Alluvial terraces and fans; 2 to 10; all aspects;
500 to 4000 ft.

Annual grass

Riverwash

(30%)

River flood plains; 2 to 10; all aspects; 500 to
4000 ft.

Barren

Soil Profile Description

Surface Layer

Brown gravelly sandy loam, weak granular
structure, medium acid

Composed of sand, gravel, cobble, stone, and
boulder deposits

Subsoil

Substratum

Yellowish brown very gravelly loamy sand,
single grain, slightly acid

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

40 to 60+; Mixed alluvium

60+;

Erosion Factor (K)

Onsite Investigations Required

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Onsite Investigations Required

Soil Permeability

Moderate to Rapid

Very rapid

Soil Drainage

Well to excessive

Subject to frequent flooding

Soil Manageability

Class

Onsite Investigations Required

Onsite Investigations Required

Group

Onsite Investigations Required

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Onsite Investigations Required

Available Water
Capacity (AWC)

Onsite Investigations Required

Onsite Investigations Required

Upper 20 inches

Onsite Investigations Required

Onsite Investigations Required

Susceptibility to
Burning Damage

Onsite Investigations Required

Onsite Investigations Required

Hydrologic Soil Group

Onsite Investigations Required

Onsite Investigations Required

Unified Soil Class
Depth Rating

Onsite Investigations Required

Onsite Investigations Required

Potential Failure as
Road Subgrade

Onsite Investigations Required

Onsite Investigations Required

Seeding
Recommendations

Onsite Investigations Required

Onsite Investigations Required

Included Areas

30 percent inclusions of Xerochrepts.

102 Pits and Dumps

Map Unit Components

Position, Slope, and Elevation

Typical Vegetation

Pits and Dumps

Barren to scattered shrubs and trees

Soil Profile Description

Surface Layer

These areas consist of placer mines located in old terrace deposits of Tertiary river gravels. The gravels and alluvial material were removed in the mining process down to hard underlying rock, leaving highly dissected depressions containing piles of large boulders. These areas have nearly vertical side slopes and flat bottoms. This map unit also consists of gravels, cobbles, and stones piled, somewhat systematically, by the action of gold dredges.

Subsoil

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

Variable depth; alluvium

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Onsite Investigations Required

Soil Drainage

Onsite Investigations Required

Soil Manageability

Class

Onsite Investigations Required

Group

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Available Water
Capacity (AWC)

Onsite Investigations Required

Upper 20 inches

Onsite Investigation Required

Susceptibility to
Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

C

Unified Soil Class

Onsite Investigations Required

Depth Rating

Potential Failure as
Road Subgrade

No

Seeding
Recommendations

Onsite Investigation Required

103 Xerochrepts-Haploxerults complex **30 to 70 percent slopes**

Map Unit Components

Approx. Proportion

Position, Slope, and
Elevation

Typical Vegetation

Xerochrepts-Haploxerults

(100%)

Mountainsides and colluvial mountainsides; 30
to 70; all aspects; 2500 to 4000 ft.

Varies from dense Douglas-fir stands to Jeffrey
pine - grass cover.

Soil Profile Description

Surface Layer

This map unit occurs in fault zones. Due to the
mixture of parent materials, drainage and
microrelief, there is great variability in soils.
Because of this variability it was impractical to
delineate the small areas of soils so the
landform itself was made the map unit.

Subsoil

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

Onsite Investigations Required

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Onsite Investigations Required

Soil Drainage

Onsite Investigations Required

Soil Manageability

Class

Onsite Investigations Required

Group

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Available Water
Capacity (AWC)

Onsite Investigations Required

Upper 20 inches

Onsite Investigations Required

Susceptibility to
Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

Onsite Investigations Required

Unified Soil Class
Depth Rating

Onsite Investigations Required

Potential Failure as
Road Subgrade

Onsite Investigations Required

Seeding

Onsite Investigations Required

Recommendations

**125 Horseshoe family, deep
10 to 40 percent slopes**

Map Unit Components	Horseshoe family, deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Old terrace remnants; 10 to 40; all aspects; 500 to 2000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Yellowish red gravelly loam, moderate subangular blocky structure, slightly acid
Subsoil	Red gravelly clay loam, moderate subangular blocky structure, very strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	60+; Mixed alluvium
Erosion Factor (K)	.20-.32
Max. Erosion Hazard	High
Soil Permeability	Moderately slow
Soil Drainage	Well
Soil Manageability	
Class	2-3E
Group	II
Forest Site Class	2-3
Regeneration Potential	Moderate to High
Available Water Capacity (AWC)	High
Upper 20 inches	2.4 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B-C
Unified Soil Class	0-13 ML
Depth Rating	13-48 CL 48-76 ML
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Goldridge and Hugo families, deep and soils similar to Goldridge, deep on 40 to 50 percent slopes.

**200 Rock outcrop, metaigneous-Lithic Xerorthents complex, metaigneous
60 to 90 percent slopes**

Map Unit Components
Approx. Proportion
Position, Slope, and
Elevation
Typical Vegetation

Rock outcrop, metaigneous

(40%)

Ridges and mountain sideslopes; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Barren

Lithic Xerorthents

(30%)

Ridges and mountain sideslopes; 60 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Very gravelly sandy loam, weak granular structure, medium acid

Subsoil

Very gravelly sandy loam, single grain, medium acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

10-20; metaigneous and metasedimentary rock

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Rapid

Soil Drainage

Somewhat excessively

Soil Manageability
Class
Group

4Gd
IV

Forest Site Class

6-7

Regeneration Potential

Low

Available Water
Capacity (AWC)

Very low

Upper 20 inches

<1.2 inches

Susceptibility to
Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

D

C

Unified Soil Class
Depth Rating

Onsite Investigations Required

Potential Failure as
Road Subgrade

No

No

Seeding
Recommendations

Onsite Investigations Required

Included Areas

30 percent inclusions of Raisio family, mod. deep and frigid soils.

**209 Hartleton-Elioak-Chenango families association, deep
20 to 50 percent slopes**

Map Unit Components	Hartleton family, deep	Elioak family, deep	Chenango family, deep
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Benches and gentle mountain sideslopes; 20 to 40; all aspects; 500 3500 ft.	Mountain sideslopes; 40 to 50; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
Soil Profile Description			
Surface Layer	Light yellowish brown silt loam, strong granular structure, medium acid	Light yellowish brown silt loam, weak to moderate subangular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Yellowish brown very gravelly clay loam, weak to moderate subangular blocky structure, medium acid
Substratum		Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid	White gravelly clay loam, weak subangular blocky structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.49	.20-.32
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to Moderately Slow	Moderate to Moderately Slow	Moderate to Moderately Rapid
Soil Drainage	Well	Well to Moderately Well	Well
Soil Manageability			
Class	3E	2-3E	3Ep
Group	III	III	III
Forest Site Class	3	2-3	3-4
Regeneration Potential	High	High	Low to Moderate
Available Water Capacity (AWC)	Moderate	Moderate to High	Low to Moderate
Upper 20 inches	2.5 inches	2.9 inches	1.7 inches
Susceptibility to Burning Damage	Low	Low to Moderate	Low
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-21 MH	0-44 ML	0-60 GC
Depth Rating	21-60 ML	44-60 GC	
Potential Failure as Road Subgrade	NO	No	No
Seeding Recommendations	2	3	3
Included Areas	25 percent inclusions of Skinner and Aiken families, deep and Holyoke family.		

**210 Skalan-Goldridge-Clallam families association, deep
20 to 70 percent slopes**

Map Unit Components	Skalan family, deep	Goldridge family, deep	Clallam family, deep
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Gentle mountain sideslopes, broad ridges; 20 to 55; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Gentle mountain sideslopes, broad ridges; 20 to 35; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 50 to 70 NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid	Dark brown to yellowish brown loam to clay loam, moderate granular structure, strongly to medium acid	Very dark grayish brown very gravelly sandy loam, moderate subangular blocky structure, medium acid
Subsoil	Pink to reddish yellow gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Reddish yellow clay loam, moderate subangular blocky structure, medium acid	Brown to yellowish brown very gravelly loam, mod. to weak subangular blocky structure, strongly to med. acid
Substratum		Red clay loam, massive, medium acid	
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.43	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderately slow	Moderately slow	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability			
Class	2-3Ep	2E	3-4Ep
Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to Moderate	High	Low
Available Water Capacity (AWC)			
Upper 20 inches	1.5 inches	2.7 inches	1.4 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-12 ML	0-14 ML	0-60 ML,GC
Depth Rating	12-56 GC	14-43 CL	
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	2	1	1
Included Areas	20 percent inclusions of Hugo and Holland families, deep, Skalan family, mod. deep, and Maymen family.		

**211 Clallam family, moderately deep
30 to 50 percent slopes**

Map Unit Components	Clallam family, moderately deep
Approx. Proportion	(75%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	Moderate
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3ep
Group	III
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	C
Unified Soil Class	0-26 ML,GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	25 percent inclusions of Dystric Lithic Xerochrepts, Hugo family, mod. deep, metasedimentary rock outcrop, and Hullt family, deep.

**212 Clallam family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Clallam family, moderately deep
Approx. Proportion	(75%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4GE
Group	III-IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	Moderate to High
Hydrologic Soil Group	C
Unified Soil Class	0-26 ML,GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	25 percent inclusions of Lithic Xerorthents, Hugo family, mod. deep, Rock outcrop, metasedimentary, and Hullt family, deep.

**213 Clallam family, moderately deep- Rock outcrop, metasedimentary complex
70 to 90 percent slopes**

Map Unit Components	Clallam family, mod. deep	Rock outcrop, metasedimentary
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4000 ft.	Mountain sideslopes; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	4GE	
Group	IV	
Forest Site Class	4	
Regeneration Potential	Moderate to Low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	Moderate to High	
Hydrologic Soil Group	C	D
Unified Soil Class	0-26 ML,GC	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Lithic Xerorthents and Hugo family, mod. deep.	

**214 Clallam family, moderately deep- Rock outcrop, metasedimentary complex
70 to 90 percent slopes**

Map Unit Components	Clallam family, mod. deep	Rock outcrop, metasedimentary
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4000 ft.	Mountain sideslopes; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	4GE	
Group	IV	
Forest Site Class	4	
Regeneration Potential	Moderate to Low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	Moderate to High	
Hydrologic Soil Group	C	D
Unified Soil Class	0-26 ML,GC	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Lithic Xerorthents and Hugo family, mod. deep.	

**215 Clallam family, moderately deep, unstable
50 to 70 percent slopes**

Map Unit Components	Clallam family, mod. deep, unstable
Approx. Proportion	(60%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly silty loam, strong subangular blocky structure, strongly acid
Substratum	Pale yellow very gravelly silty clay loam, weak granular structure, strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; Sheared metasedimentary schist
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderately rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability	
Class	3-4SG
Group	IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.5 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	C
Unified Soil Class	0-12 ML
Depth Rating	12-36 GC
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	40 percent inclusions of Hugo family, mod. deep, Dystric Lithic Xerochrepts, metasedimentary rock outcrop, and soils similar to Clallam family, mod. deep, unstable, except deep.

**216 Clallam family, moderately deep, unstable
50 to 70 percent slopes**

Map Unit Components	Clallam family, mod. deep, unstable
Approx. Proportion	(60%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly silty loam, strong subangular blocky structure, strongly acid
Substratum	Pale yellow very gravelly silty clay loam, weak granular structure, strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; Sheared metasedimentary schist
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderately rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability Class	3-4SG
Group	IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.5 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	C
Unified Soil Class	0-12 ML
Depth Rating	12-36 GC
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	40 percent inclusions of Hugo family, mod. deep, Dystric Lithic Xerochrepts, metasedimentary rock outcrop, and soils similar to Clallam family, mod. deep, unstable, except deep.

**220 Hullt-Coyata-Clallam families association, deep
35 to 70 percent slopes**

Map Unit Components	Hullt family, deep	Coyata family, deep	Clallam family, deep
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; NW to E; 3000 to 4000 ft.	Mountain sideslopes and ridges; 35 to 70; NW to E; 3000 to 4000 ft.	Mountain sideslopes; 35 to 70; NW to E; 3000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Yellowish brown loam, weak subangular blocky structure, medium acid	Brown very gravelly loam, weak granular structure, medium acid	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid
Subsoil	Pale brown to light yellowish brown loam, weak subangular blocky structure, slightly acid	Light yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown very gravelly loam, strong subangular blocky structure strongly acid
Substratum		Light brownish gray very gravelly clay loam, massive, strongly acid	Very pale brown extremely gravelly loam to extremely gravelly clay loam, massive, strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Somewhat excessively	Well
Soil Manageability Class	3-4GE	3-4GE	3-4Gp
Group	III	III	III
Forest Site Class	3	3	4
Regeneration Potential	Moderate to High	Moderate	Moderate
Available Water Capacity (AWC)	Moderate	Moderate	Low
Upper 20 inches	2.3 inches	2.2 inches	1.4 inches
Susceptibility to Burning Damage	Low	Moderate	Moderate
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-45 ML	0-35 ML	0-60 ML
Depth Rating		35-51 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Skalan, mod. deep, and soils similiar to Coyata and Hullt families, deep, except less than 20 inches deep.		

**221 Hullt-Coyata-Clallam families association, deep, dry
35 to 70 percent slopes**

Map Unit Components	Hullt family, deep, dry (35%)	Coyata family, deep, dry (25%)	Clallam family, deep, dry (15%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; SE to W; 3000 to 4000 ft.	Mountain sideslopes and ridges; 35 to 70; SE to W; 3000 to 4000 ft.	Mountain sideslopes; 35 to 70; SE to W; 3000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Yellowish brown loam, weak subangular blocky structure, medium acid	Brown very gravelly loam, strong subangular blocky structure, strongly acid	Very pale brown very gravelly loam, moderate subangular blocky structure, strongly acid
Subsoil	Pale brown to light yellowish brown loam, weak subangular blocky structure, slightly acid	Light yellowish brown very gravelly clay loam, moderate subangular blocky structure, slightly acid	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid
Substratum		Light brownish gray very gravelly clay loam, massive, strongly acid	Very pale brown very gravelly loam to very gravelly clay loam, massive, strongly acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Somewhat excessively	Somewhat excessively
Soil Manageability Class	3-4E	3-4E	3-4Ep
Group	III	III	III
Forest Site Class	4	4	4-5
Regeneration Potential	Moderate	Low	Very Low
Available Water Capacity (AWC)	Moderate	Moderate	Low
Upper 20 inches	2.3 inches	2.2 inches	1.4 inches
Susceptibility to Burning Damage	Moderate	High	High
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-45 ML	0-35 ML	0-60 ML,GC
Depth Rating		35-51 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Skalan family, mod. deep and a dry phase of soils similiar to Coyata and Hullt families except less than 20 inches deep.		

**222 Goldridge family, deep
30 to 50 percent slopes**

Map Unit Components	Goldridge family, deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Light yellowish brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellow clay loam, moderate subangular blocky structure; medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-80; metasedimentary rock
Erosion Factor (K)	.20-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3E
Group	III
Forest Site Class	2-3
Regeneration Potential	High
Available Water Capacity (AWC)	High
Upper 20 inches	2.7 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-14 ML
Depth Rating	14-43 CL
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Hugo and Aiken families, deep.

**223 Goldridge family, deep
50 to 70 percent slopes**

Map Unit Components
Approx. Proportion
Position, Slope, and
Elevation
Typical Vegetation

Goldridge family, deep

(85%)

Mountain sideslopes; 50 to 70; all aspects; 1000 to 3000 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Light yellowish brown gravelly loam, moderate granular structure, medium acid

Subsoil

Yellow clay loam, moderate subangular blocky structure, medium acid

Substratum

Soil Properties & Management Interpretations

**Rooting Depth (in.),
Underlying Material**

40-80; metasedimentary rock

Erosion Factor (K)

.20-.43

Max. Erosion Hazard

High

Soil Permeability

Moderate

Soil Drainage

Well

Soil Manageability

Class

3-4E

Group

III-IV

Forest Site Class

2-3

Regeneration Potential

High

**Available Water
Capacity (AWC)**

High

Upper 20 inches

2.7 inches

**Susceptibility to
Burning Damage**

Low

Hydrologic Soil Group

C

Unified Soil Class

0-14 ML

Depth Rating

14-43 CL

**Potential Failure as
Road Subgrade**

Yes

Seeding

1

Recommendations

Included Areas

15 percent inclusions of Hugo and Aiken families, deep.

**224 Goldridge family, deep
30 to 50 percent slopes**

Map Unit Components	Goldridge family, deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Light yellowish brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellow clay loam, moderate subangular blocky structure; medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-80; metasedimentary rock
Erosion Factor (K)	.20-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3E
Group	III
Forest Site Class	2-3
Regeneration Potential	High
Available Water Capacity (AWC)	High
Upper 20 inches	2.7 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-14 ML
Depth Rating	14-43 CL
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Hugo and Aiken families, deep.

**225 Goldridge-Kistirn-Aiken families association, deep
5 to 70 percent slopes**

Map Unit Components	Goldridge family, deep	Kistirn family, deep	Aiken family, deep
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and near ridges; 35 to 70; NW to W, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and benches; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Light yellowish brown gravelly loam, moderate granular structure medium acid	Yellowish brown very gravelly loam, weak granular structure, medium acid	Dark brown loam, moderate subangular blocky structure, slightly acid
Subsoil	Light yellowish brown to yellow gravelly clay loam to clay, moderate subangular blocky structure, medium acid	Strong brown very gravelly clay loam, moderate subangular blocky structure, strongly acid	Strong brown clay loam to silt clay loam, moderate angular blocky structure, slightly acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.43	.20-.28	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to slow	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4E	3-4E	2-3E
Group	III	III	III
Forest Site Class	2-3	3-4	3
Regeneration Potential	High	Moderate	High
Available Water Capacity (AWC)	Moderate to High	Moderate	High
Upper 20 inches	2.7 inches	1.9 inches	3.2 inches
Susceptibility to Burning Damage	Low	Moderate	Low
Hydrologic Soil Group	C	C	B
Unified Soil Class	0-14 ML	0-53 ML	0-7 CL
Depth Rating	14-43 CL	53-79 GC	7-67 CL,MH
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Clallam family, deep and Deadwood family.		

**226 Kistirn-Goldridge families, deep -Deadwood family association
30 to 70 percent slopes**

Map Unit Components	Kistirn family, deep	Goldridge family, deep	Deadwood family
Approx. Proportion	(30%)	(20%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 60; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.	Mountain sideslopes and near ridges; 30 to 60; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.	Ridges; 40 to 70; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Canyon live Oak
Soil Profile Description			
Surface Layer	Yellowish brown very gravelly loam, weak granular structure, medium acid	Light yellowish brown gravelly loam, moderate granular structure, medium acid	Light gray to very pale brown gravelly loam, weak granular structure, medium acid
Subsoil	Strong brown very gravelly clay loam, moderate subangular blocky structure, strongly acid	Light yellowish brown to yellow gravelly clay loam to clay, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock	20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.43	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderate to rapid
Soil Drainage	Well	Well	Well to somewhat excessively
Soil Manageability Class	3E	3E	3-4Ep
Group	III	III	III
Forest Site Class	3-4	2-3	5-6
Regeneration Potential	Moderate	High	Low
Available Water Capacity (AWC)	Moderate	Moderate to High	Low
Upper 20 inches	1.9 inches	2.7 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Low	High
Hydrologic Soil Group	C	C	D
Unified Soil Class	0-53 ML	0-14 ML	0-9 ML
Depth Rating	53-79 CL	14-43 CL	9-16 GC
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	1	1	1
Included Areas	30 percent inclusions of Clallam and Hugo families, mod. deep and soils similiar to Kistirn family, deep, except stony.		

**227 Elioak-Hartleton-Aiken families association, deep
15 to 50 percent slopes**

Map Unit Components	Elioak family, deep	Hartleton family, deep	Aiken family, deep
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 15 to 40; all aspects; 500 to 3500 ft.	Mountain sideslopes; 15 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes and benches;15 to 40; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
Soil Profile Description			
Surface Layer	Light yellowish brown silt loam, weak to moderate subangular blocky structure, medium acid	Light yellowish brown silt loam, granular structure, medium acid	Dark brown loam, moderate subangular blocky structure, medium acid
Subsoil	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Strong brown silty clay loam to silty clay, moderate subangular blocky to angular blocky structure, slightly acid
Substratum	Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid		
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	60+; metasedimentary rock
Erosion Factor (K)	.20-.49	.20-.28	.20-.37
Max. Erosion Hazard	Very High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow	Moderately slow to slow
Soil Drainage	Well to moderately well	Well to moderately well	Well
Soil Manageability Class	2-3E	2-3E	2-3E
Group	II	II	II
Forest Site Class	2-3	3	3
Regeneration Potential	High	High	Moderate to High
Available Water Capacity (AWC)	Moderate to High	Moderate	High to Very High
Upper 20 inches	2.9 inches	2.5 inches	3.2 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	C	B-C	B-C
Unified Soil Class	0-44 ML	0-21 MH	0-7 CL
Depth Rating	44-60 GC	21-60 ML	7-67 CL,MH
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	3	2	1
Included Areas	20 percent inclusions of Chenango and Skinner families, deep and Holyoke family.		

**228 Hartleton-Elioak families, deep-Holyoke family association
30 to 70 percent slopes**

Map Unit Components	Hartleton family, deep	Elioak family, deep	Holyoke family
Approx. Proportion	(35%)	(15%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 40 to 60; all aspects; 500 to 3500 ft.	Mountain sideslopes; 30 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 70; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Rewood - Douglas-fir	Rewood - Douglas-fir
Soil Profile Description			
Surface Layer	Light yellowish brown silt loam, strong granular structure, medium acid	Light yellowish brown silt loam, weak to moderate subangular blocky structure, medium acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, medium acid
Subsoil	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Light yellowish brown to lt. gray gravelly silt loam, moderate to strong subang. blocky structure, med. to strongly acid
Substratum		Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid	
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.49	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow	Moderate
Soil Drainage	Well to Moderately Well	Well to Moderately Well	Well
Soil Manageability Class	3E	3E	3Ed
Group	III	III	III
Forest Site Class	3	2-3	4
Regeneration Potential	High	High	Moderate
Available Water Capacity (AWC)	Moderate	Moderate to High	Very low to low
Upper 20 inches	2.5 inches	2.9 inches	2.5 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-21 MH	0-44 ML	0-19 ML
Depth Rating	21-60 ML	44-60 GC	
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	2	3	3
Included Areas	30 percent inclusions of Chenango and Skinner families, deep, soils similar to Hartleton family, deep except stony, and soils similar to Holyoke family, except skeletal.		

**230 Skalan-Goldridge families complex, deep
20 to 65 percent slopes**

Map Unit Components	Skalan family, deep	Goldridge family, deep
	(40%)	(35%)
Approx. Proportion		
Position, Slope, and Elevation	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes and broad ridges; 20 to 45; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Very dark gray to brown gravelly loam, weak granular structure, strongly acid	Light yellowish brown to yellow gravelly loam to clay loam, medium granular structure, strongly to medium acid
Subsoil	Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Yellow gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-80; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.43
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderate to moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	3-4Ep	2-3E
Group	III	III
Forest Site Class	3-4	2-3
Regeneration Potential	Low	High
Available Water Capacity (AWC)	Low	High
Upper 20 inches	1.5 inches	2.7 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	C	C
Unified Soil Class	0-12 ML	0-14 ML
Depth Rating	12-56 GC	14-43 CL
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	2	1
Included Areas	25 percent inclusions of Skalan family, mod. deep and Hugo family, deep and mod. deep.	

**231 Goldridge family, deep
15 to 30 percent slopes**

Map Unit Components

Approx. Proportion

Goldridge family, deep

(85%)

**Position, Slope, and
Elevation**

Mountain sideslopes and broad ridges; 15 to 30;
NW to E, 600 to 4500 ft.; SE to W, 600 to 4800
ft.

Typical Vegetation

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Light yellowish brown to yellow gravelly loam
to clay loam, moderately granular structure;
strongly to medium acid

Subsoil

Yellow gravelly clay loam, moderate
subangular blocky structure, medium acid

Substratum

Soil Properties & Management Interpretations

**Rooting Depth (in.),
Underlying Material**

40-80; metasedimentary rock

Erosion Factor (K)

.20-.43

Max. Erosion Hazard

Moderate

Soil Permeability

Moderately slow

Soil Drainage

Well

Soil Manageability

Class

1

Group

I

Forest Site Class

2-3

Regeneration Potential

High

**Available Water
Capacity (AWC)**

High

Upper 20 inches

2.7 inches

**Susceptibility to
Burning Damage**

Low

Hydrologic Soil Group

C

Unified Soil Class

0-14 ML

Depth Rating

14-43 CL

**Potential Failure as
Road Subgrade**

Yes

Seeding

1

Recommendations

Included Areas

15 percent inclusions of Skalan and Hugo families, deep.

**232 Skalan-Hugo families association, deep
25 to 65 percent slopes**

Map Unit Components		Skalan family, deep	Hugo family, deep
Approx. Proportion		(45%)	(35%)
Position, Slope, and Elevation		Upper portions of mountain sideslopes; 25 to 40; NW to E. 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation		Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer		Very dark gray to pale brown gravelly loam, weak granular structure, strongly acid	Yellowish brown gravelly heavy loam, weak granular structure, medium acid
Subsoil		Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		40-60; metasedimentary rock	40-60; metasedimentary rock
Erosion Factor (K)		.20-.37	.20-.28
Max. Erosion Hazard		High	High
Soil Permeability		Moderately slow	Moderately slow
Soil Drainage		Well	Well
Soil Manageability Class		2-3Ep	3-4E
Group		III	III
Forest Site Class		3-4	3
Regeneration Potential		Moderate	Moderate to High
Available Water Capacity (AWC)		Moderate	Moderate
Upper 20 inches		1.5 inches	3.0 inches
Susceptibility to Burning Damage		Moderate	Low
Hydrologic Soil Group		C	C
Unified Soil Class		0-12 ML	0-40 ML
Depth Rating		12-56 GC	40-60 GC
Potential Failure as Road Subgrade		No	No
Seeding Recommendations		2	1
Included Areas		20 percent inclusions of Skalan family, mod. deep and Goldridge family, deep.	

**235 Skalan family, moderately deep
25 to 70 percent slopes**

Map Unit Components	Skalan family, mod. deep
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes; 25 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Light reddish brown gravelly loam, weak subangular blocky structure, strongly acid
Subsoil	Yellowish red to reddish brown gravelly to very gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.37
Max. Erosion Hazard	High
Soil Permeability	Moderately slow
Soil Drainage	Well
Soil Manageability Class	3-4Ep
Group	III
Forest Site Class	3-4
Regeneration Potential	Low to Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.2 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-34 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	2
Included Areas	20 percent inclusions of soils similar to Skalan family, mod. deep except less than 20 inches deep.

**236 Doty-Hecker families association, deep
25 to 70 percent slopes**

Map Unit Components	Doty family, deep	Hecker family, deep
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 25 to 45; SE to W; 1000 to 4000 ft.	Mountain sideslopes; 40 to 70; all aspects; 1000 to 4000 ft.
Typical Vegetation	Oregon White Oak	Oregon White Oak
Soil Profile Description		
Surface Layer	Brown heavy loam, strong subangular blocky structure breaking to moderate granular, neutral	Pale brown gravelly loam, moderate granular structure, slightly acid
Subsoil	Brown to pale brown clay loam, moderate subangular blocky structure, neutral to slightly acid	Light brownish gray very gravelly clay loam, moderate subangular blocky structure, neutral
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.37	.24-.43
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderate to moderately slow	Moderate
Soil Drainage	Well to moderately well	Well
Soil Manageability		
Class	2-3e	3-4E
Group	III	III
Forest Site Class	4(Estimated)	4(Estimated)
Regeneration Potential	Moderate	Moderate
Available Water Capacity (AWC)		
Upper 20 inches	3.3 inches	2.2 inches
Susceptibility to Burning Damage	Low to moderate	Low
Hydrologic Soil Group	B-C	B-C
Unified Soil Class	0-25 OL	0-13 ML
Depth Rating	25-60 ML	13-60 GC
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	3	1
Included Areas	20 percent inclusions of Oxalis, Melbourne, and Soulajule families, deep.	

**237 Clallam family, mod. deep, unstable-Melbourne family, deep association
35 to 70 percent slopes**

Map Unit Components	Clallam family, mod. deep, unstable	Melbourne family, deep
Approx. Proportion	(40%)	(25%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 35 to 70; NW to E; 1000 to 4000 ft.	Broad ridges and mountain sideslopes; 35 to 50; all aspects; 1000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, moderate granular structure, slightly to medium acid	Pale brown clay loam, strong granular structure, slightly acid
Subsoil	Very pale brown to pale brown loam, moderate to strong subangular blocky structure, medium acid	Light yellowish brown gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum	Pale yellow very gravelly clay loam, weak granular structure, strongly acid	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; Schist and fractured shale	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.28	.28-.55
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well to moderately well
Soil Manageability Class	3-4E	3E
Group	III	III
Forest Site Class	4	3
Regeneration Potential	Moderate	High
Available Water Capacity (AWC)	Low to Moderate	High
Upper 20 inches	2.5 inches	3.2 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-12 ML	0-45 ML
Depth Rating	12-36 GC	
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	1	1
Included Areas	35 percent inclusions of SoulaJule and Holland families, deep and soils similar to Clallam family, mod. deep, unstable, except deep.	

**238 Melbourne-Soulajule families association, deep
5 to 35 percent slopes**

Map Unit Components	Melbourne family, deep	Soulajule family, deep
Approx. Proportion	(40%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes and benches; 5 to 35; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.	Mountain sideslopes; 5 to 35; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown clay loam, strong granular structure, slightly acid	Brown gravelly loam, moderate granular structure, slightly acid
Subsoil	Light yellowish brown heavy clay loam, moderate subangular blocky structure, medium acid	Light yellowish brown very gravelly heavy clay loam, moderate subangular blocky structure, medium acid
Substratum	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.28-.55	.24-.43
Max. Erosion Hazard	Moderate	Moderate
Soil Permeability	Moderate	Moderate
Soil Drainage	Well to moderately well	Well to moderately well
Soil Manageability Class	2e	2p
Group	II	II
Forest Site Class	3	4
Regeneration Potential	High	Low to Moderate
Available Water Capacity (AWC)	High	Moderate
Upper 20 inches	3.2 inches	1.9 inches
Susceptibility to Burning Damage	Low	Moderate
Hydrologic Soil Group	C	C
Unified Soil Class	0-45 ML	0-13 ML
Depth Rating		13-60 GC
Potential Failure as Road Subgrade	Yes	Yes
Seeding Recommendations	1	3
Included Areas	35 percent inclusions of Holland, Aiken, and Goldridge families, deep and soils similar to Melbourne and Soulajule families, deep, except on greater than 35 percent slopes.	

**240 Hugo family, deep-Clallam family, moderately deep association
25 to 70 percent slopes**

Map Unit Components	Hugo family, deep	Clallam family, moderately deep
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Upper mountain sideslopes and broad ridges; 25 to 45; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Yellowish brown gravelly heavy loam, weak granular structure, medium acid	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderate	Moderately rapid
Soil Drainage	Well	Well
Soil Manageability Class	2-3e	3-4E
Group	III	III
Forest Site Class	3	4
Regeneration Potential	Moderate to High	Low to Moderate
Available Water Capacity (AWC)	Moderate	Low
Upper 20 inches	3.0 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	B
Unified Soil Class	0-40 ML	0-26 ML,GC
Depth Rating	40-60 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Skalan and Goldridge families, deep and Maymen family.	

**241 Skinner-Chenango families association, deep
25 to 70 percent slopes**

Map Unit Components		Skinner family, deep	Chenango family
Approx. Proportion		(45%)	(40%)
Position, Slope, and Elevation		Mountain sideslopes; 25 to 45; all aspects; 500 to 3500 ft.	Mountain sideslopes; 45 to 70; all aspects; 500 to 3500 ft.
Typical Vegetation		Redwood - Douglas-fir	Redwood - Douglas-fir
Soil Profile Description			
Surface Layer		Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil		Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum		Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	White gravelly clay loam, moderate subangular blocky structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)		.20-.32	.20-.32
Max. Erosion Hazard		High	High
Soil Permeability		Moderate to moderately slow	Moderate to moderately slow
Soil Drainage		Well to moderately well	Well
Soil Manageability			
Class		2-3E	3-4Ep
Group		III	III
Forest Site Class		2-3	3-4
Regeneration Potential		High	Low to Moderate
Available Water Capacity (AWC)		Moderate to High	Low to Moderate
Upper 20 inches		3.2 inches	1.7 inches
Susceptibility to Burning Damage		Low	Low to Moderate
Hydrologic Soil Group		B-C	B-C
Unified Soil Class		0-32 ML	0-60 GC
Depth Rating		32-56 GC	
Potential Failure as Road Subgrade		No	No
Seeding Recommendations		1	3
Included Areas		15 percent inclusions of Hartleton and Elioak families, deep and Holyoke family.	

**242 Maymen family-Clallam family, mod. deep, unstable association
35 to 90 percent slopes**

Map Unit Components	Maymen family	Clallam family, mod. deep, unstable
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Narrow ridges and mountain sideslopes; 35 to 90; NW to E, 600 to 4500 ft.; SE to W, 500 to 4800 ft.	Unstable mountain sideslopes; 45 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid	Grayish brown gravelly loam, strong to moderate granular structure, medium acid
Subsoil	Very pale brown gravelly loam, weak subangular blocky structure, medium acid	Very pale to light yellowish brown very gravelly loam, moderate to strong subangular blocky structure, strongly to medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	10-20; metasedimentary rock	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Somewhat excessively	Well
Soil Manageability Class	3-4Gd	3-4GE
Group	IV	IV
Forest Site Class	5	4
Regeneration Potential	Low	Moderate
Available Water Capacity (AWC)	Very Low	Low
Upper 20 inches	1.9 inches	2.5 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	B
Unified Soil Class	0-13 ML	0-12 ML
Depth Rating		12-36 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Deadwood family, Hugo family, mod. deep, and soils similar to Clallam family, mod. deep, unstable, except deep.	

243 Maymen family-Rock outcrop, metasedimentary complex 60 to 80 percent slopes

Map Unit Components	Maymen family	Rock outcrop, metasedimentary
Approx. Proportion	(45%)	(40%)
Position, Slope, and Elevation	Upper mountain sideslopes; 60 to 80; NW to E; 600 to 4500 ft.	Mountain sideslopes and inner gorges; SE to W; 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	10-20; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Somewhat excessively	
Soil Manageability		
Class	4GE	
Group	IV	
Forest Site Class	5	
Regeneration Potential	Low	
Available Water Capacity (AWC)	Very low	
Upper 20 inches	1.9 inches	
Susceptibility to Burning Damage	Moderate	
Hydrologic Soil Group	C	D
Unified Soil Class	0-18 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	15 percent inclusions of Deadwood family and colluvial material.	

244 Chenango-Skinner families, deep-Holyoke family association
35 to 80 percent slopes

Map Unit Components	Chenango family, deep	Skinner family, deep	Holyoke family
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 80; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
Soil Profile Description			
Surface Layer	Pale brown very gravelly loam, moderate granular structure, strongly acid	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, strongly acid
Subsoil	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Light yellowish brown to light gray gravelly silt loam, moderate to strong subangular blocky structure, medium acid
Substratum	White very gravelly clay loam, moderate subangular blocky structure, medium acid	Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately rapid	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Well to moderately well	Well
Soil Manageability			
Class	3-4Ep	3E	4GE
Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to moderate	High	Moderate
Available Water Capacity (AWC)			
Upper 20 inches	1.7 inches	3.2 inches	2.5 inches
Susceptibility to Burning Damage	Low to moderate	Low	Moderate
Hydrologic Soil Group	B-C	B-C	B-C
Unified Soil Class	0-60 GC	0-32 ML	0-19 ML
Depth Rating		32-56 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	1	3
Included Areas	25 percent inclusions of Hartleton and Elioak families, deep and soils similar to Holyoke family, except skeletal.		

**245 Clallam family, moderately deep-Hugo family, deep-Maymen family association
35 to 70 percent slopes**

Map Unit Components	Clallam family, mod. deep	Hugo family, deep	Maymen family
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mid-mountain sideslopes along drainages; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Upper mountain sideslopes and benchy areas; 35 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 55 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Yellowish brown gravelly loam, weak granular structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam weak subangular blocky structure, medium acid
Substratum			

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderately slow	Moderate
Soil Drainage	Well	Well	Somewhat excessively
Soil Manageability Class	3-4Ep	3E	4Ed
Group	IV	IV	IV
Forest Site Class	4	3	5
Regeneration Potential	Low to moderate	Moderate to high	Low
Available Water Capacity (AWC)	Low	Moderate	Very low
Upper 20 inches	1.7 inches	3.0 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	C
Unified Soil Class	0-26 ML,GC	0-40 ML	0-18 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Deadwood family, Skalan family, mod. deep, Goldridge family, deep, and others soils on greater than 70 percent slopes.		

**246 Clallam family, moderately deep-Maymen family association
45 to 80 percent slopes**

Map Unit Components	Clallam family, mod. deep	Maymen family
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Mid-mountain sideslopes; 45 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 65 to 80; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Somewhat excessively
Soil Manageability Class	3-4Ep	4Gd
Group	IV	IV
Forest Site Class	4	5
Regeneration Potential	Low to moderate	Low
Available Water Capacity (AWC)	Low	Very low
Upper 20 inches	1.7 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-26 ML,GC	0-18 ML
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Rock outcrop, metasedimentary, Deadwood family, Hugo family, mod. deep, and soils on greater than 80 percent slopes.	

**247 Clallam family, moderately deep-Hugo family, deep-Maymen family association
35 to 70 percent slopes**

Map Unit Components	Clallam family, mod. deep	Hugo family, deep	Maymen family
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mid-mountain sideslopes along drainages; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Upper mountain sideslopes and benchy areas; 35 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 55 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Yellowish brown gravelly loam, weak granular structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam weak subangular blocky structure, medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderately slow	Moderate
Soil Drainage	Well	Well	Somewhat excessively
Soil Manageability			
Class	3-4Ep	3E	4Ed
Group	IV	IV	IV
Forest Site Class	4	3	5
Regeneration Potential	Low to moderate	Moderate to high	Low
Available Water Capacity (AWC)			
Upper 20 inches	1.7 inches	3.0 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	C
Unified Soil Class	0-26 ML,GC	0-40 ML	0-18 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Deadwood family, Skalan family, mod. deep, Goldridge family, deep, and others soils on greater than 70 percent slopes.		

248 Chenango-Skinner families, deep-Holyoke family association
35 to 80 percent slopes

Map Unit Components	Chenango family, deep	Skinner family, deep	Holyoke family
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 80; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir

Soil Profile Description

Surface Layer	Pale brown very gravelly loam, moderate granular structure, strongly acid	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, strongly acid
Subsoil	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Light yellowish brown to light gray gravelly silt loam, moderate to strong subangular blocky structure, medium acid
Substratum	White very gravelly clay loam, moderate subangular blocky structure, medium acid	Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately rapid	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Well to moderately well	Well
Soil Manageability Class	3-4Ep	3E	4GE
Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to moderate	High	Moderate
Available Water Capacity (AWC)	Low to moderate	Moderate	Very low
Upper 20 inches	1.7 inches	3.2 inches	2.5 inches
Susceptibility to Burning Damage	Low to moderate	Low	Moderate
Hydrologic Soil Group	B-C	B-C	B-C
Unified Soil Class	0-60 GC	0-32 ML	0-19 ML
Depth Rating		32-56 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	1	3
Included Areas	25 percent inclusions of Hartleton and Elioak families, deep and soils similar to Holyoke family, except skeletal.		

**250 Oxalis-Hecker-Doty families association, deep
25 to 70 percent slopes**

Map Unit Components	Oxalis family, deep	Hecker family, deep	Doty family, deep
Approx. Proportion	(35%)	(20%)	(15%)
Position, Slope, and Elevation	Hummocky mountain sideslopes; 25 to 70; NW to E, 2000 to 4500 ft. ; SE to W, 2000 to 4800 ft.	Convex mountain sideslopes; 25 to 70; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.	Concave mountain sideslopes and foot slopes; 25 to 70; NW to E, 2000 to 4500 ft. SE to W, 2000 to 4800 ft.
Typical Vegetation	Annual grass	Oregon white oak	Oregon white oak
Soil Profile Description			
Surface Layer	Light brownish gray silty clay, strong subangular blocky structure, slightly acid	Pale brown gravelly heavy loam, strong granular structure, slightly acid	Brown loam, moderate granula structure, neutral
Subsoil	Light brownish gray silty clay, weak subangular blocky structure to massive, slightly acid to neutral	Grayish brown very gravelly clay loam, moderate to strong subangular blocky structure, medium to slightly acid	Yellowish brown to brown ligh clay loam, moderate to strong subangular blocky structure, slightly acid
Substratum	Variegated pale olive and dark gray silty clay, weak subangular blocky structure to massive, neutral		
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; Sheared shaley sediments	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.32-.49	.24-.43	.20-.37
Max. Erosion Hazard	Very High	High	High
Soil Permeability	Moderately slow to slow	Moderate	Moderate
Soil Drainage	Poorly	Well to moderately well	Well
Soil Manageability Class	3-4EW	3-4Ep	3-4E
Group	III	III	III
Forest Site Class	Not Commercial	4 (Estimated)	4 (Estimated)
Regeneration Potential	Low to Moderate	Moderate	High
Available Water Capacity (AWC)	Moderate to high	Moderate	Moderate
Upper 20 inches	3.8 inches	2.2 inches	3.3 inches
Susceptibility to Burning Damage	Moderate	Moderate	Low
Hydrologic Soil Group	C	B-C	B
Unified Soil Class	0-60 CH	0-13 ML	0-25 ML
Depth Rating		13-60 GC	25-60 ML
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	1	1	3
Included Areas	30 percent inclusions of Melbourne family, deep, Deadwood family, and similar soils except mod. deep.		

**252 Melbourne-Holland families association, deep
35 to 70 percent slopes**

Map Unit Components		Melbourne family, deep	Holland family, deep
Approx. Proportion		(40%)	(35%)
Position, Slope, and Elevation		Mountain sideslopes; 35 to 50; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Mountain sideslopes; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
Typical Vegetation		Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer		Pale brown clay loam, granular structure, slightly acid	Pale brown gravelly loam, moderate granular structure, strongly acid
Subsoil		Light yellowish brown gravelly heavy clay loam, moderate subangular blocky structure, medium acid	Strong brown loam to gravelly loam, moderate to strong subangular blocky structure, strongly acid
Substratum		Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	Reddish yellow very gravelly loam, massive, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)		.28-.55	.20-.28
Max. Erosion Hazard		High	High
Soil Permeability		Moderate	Moderate
Soil Drainage		Well to moderately well	Well to moderately well
Soil Manageability Class		3E	3-4GE
Group		III	III
Forest Site Class		3	3
Regeneration Potential		High	High
Available Water Capacity (AWC)		High	Moderate to high
Upper 20 inches		3.2 inches	2.1 inches
Susceptibility to Burning Damage		Low	Moderate
Hydrologic Soil Group		C	B-C
Unified Soil Class		0-45 ML	0-60 ML
Depth Rating			
Potential Failure as Road Subgrade		Yes	No
Seeding Recommendations		1	1
Included Areas		25 percent inclusions of Voorhies family, mod. deep, and Goldridge and Soulajule families, deep.	

**253 Melbourne-Holland families association, deep
5 to 35 percent slopes**

Map Unit Components Approx. Proportion Position, Slope, and Elevation Typical Vegetation	Melbourne family, deep (45%)	Holland family, deep (25%)
	Mountain sideslopes and benches; 5 to 35; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Mountain sideslopes and benches; 5 to 35; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
	Soil Profile Description	
	Surface Layer Pale brown clay loam, strong granular structure, slightly acid	Pale brown gravelly loam, moderate granular structure, strongly acid
Subsoil	Light yellowish brown gravelly heavy clay loam, moderate subangular blocky structure, medium acid	Strong brown loam to gravelly loam, moderate to strong subangular blocky structure, strongly acid
Substratum	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	Reddish yellow very gravelly loam, massive, medium acid
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.28-.55	.20-.28
Max. Erosion Hazard	Moderate to high	Moderate to high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well to moderately well	Well
Soil Manageability Class	2e	2e
Group	II	II
Forest Site Class	3	3
Regeneration Potential	High	High
Available Water Capacity (AWC)	High	Moderate to high
Upper 20 inches	3.2 inches	2.1 inches
Susceptibility to Burning Damage	Low	Moderate
Hydrologic Soil Group	C	B-C
Unified Soil Class	0-45 ML	0-60 ML
Depth Rating		
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	1	1
Included Areas	30 percent inclusions of Skalan family, mod. deep, and Goldridge and Soulajule families, deep.	

**254 Deadwood-Skymor families association
35 to 70 percent slopes**

Map Unit Components	Deadwood family	Skymor family
	(45%)	(20%)
Approx. Proportion		
Position, Slope, and Elevation	Convex mountain sideslopes; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Convex mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	Annual grass	Annual grass
Soil Profile Description		
Surface Layer	Very pale brown very gravelly loam, weak granular structure, medium acid	Dark grayish brown gravelly loam, moderate subangular blocky structure, slightly acid
Subsoil	Very pale brown very gravelly loam, weak subangular blocky structure, medium acid	Grayish brown very gravelly loam, moderate subangular blocky structure, slightly acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	10-20; sedimentary and metasedimentary rock	10-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.32
Max. Erosion Hazard	High	Very high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	5-6	5
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low	Very low
Upper 20 inches	1.7 inches	1.7 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C	C
Unified Soil Class	0-9 ML	0-16 ML
Depth Rating	9-19 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	3
Included Areas	35 percent inclusions of Voorhies family, mod.deep, Rock outcrop,metasedimentary, and micaceous soils.	

**256 Hecker family, deep
35 to 70 percent slopes**

Map Unit Components	Hecker family, deep
Approx. Proportion	(60%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
Typical Vegetation	Oregon white oak

Soil Profile Description

Surface Layer	Pale brown gravelly loam to gravelly clay loam, moderate granular to moderate subangular blocky structure, slightly acid
Subsoil	Light brownish gray very gravelly clay loam, moderate subangular blocky structure, neutral
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.24-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4GE
Group	III
Forest Site Class	4 (Estimate)
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.2 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	B-C
Unified Soil Class	0-13 ML
Depth Rating	13-60 GC
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	40 percent inclusions of Melbourne, Oxalis, and Soulajule families, deep, Rock outcrop, metasedimentary, and similar soils except moderately deep.

257 Bins-Nanny families, deep-Woodseye family association
5 to 35 percent slopes

Map Unit Components	Bins family, deep	Nanny family, deep	Woodseye family
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft. SE to W, 4800 to 5500 ft.	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	White fir	White fir	White fir
Soil Profile Description			
Surface Layer	Yellowish brown loam, weak granular structure, slightly acid	Very dark grayish brown gravelly loam, weak granular structure, slightly acid	Yellowish brown gravelly loam, moderate to strong granular structure, slightly acid
Subsoil	Light olive brown loam, moderate subangular blocky structure breaks to moderate granular, medium to strongly acid	Brown to pale yellow very gravelly loam, weak subangular blocky structure, slightly acid	Yellowish brown extremely gravelly loam, moderate to strong granular structure, medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock	12-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.24-.43
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderately rapid
Soil Drainage	Well	Well	Well to somewhat excessively
Soil Manageability			
Class	2E	2Ep	2Ed
Group	II	II	II
Forest Site Class	3	3-4	4-5
Regeneration Potential	Low to moderate	Low	Low
Available Water Capacity (AWC)	Moderate to high	Low to moderate	Very low to low
Upper 20 inches	2.8 inches	1.4 inches	1.3 inches
Susceptibility to Burning Damage	Low to moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	B-C	C
Unified Soil Class	0-58 ML	0-60 GC	0-14 ML
Depth Rating			
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	3	3
Included Areas	25 percent inclusions of Deadman family, deep, Althouse family, mod. deep, Rock outcrop, metasedimentary, and soils similar to Bins family, deep and Nanny family, deep, except mod. deep.		

**258 Albus-Race families association, deep
35 to 70 percent slopes**

Map Unit Components		Albus family, deep	Race family, deep
Approx. Proportion		(45%)	(35%)
Position, Slope, and Elevation		Mountain sideslopes and ridges; 35 to 70; NW to E, 4500 to 5800 ft.; SE to W, 4800 to 5800 ft.	Mountain sideslopes and ridges; 35 to 70; NW to E, 4500 to 5800 ft.; SE to W, 4800 to 5800 ft.
Typical Vegetation		White fir	White fir
Soil Profile Description			
Surface Layer		Light olive gray gravelly loam, moderate granular structure, slightly to medium acid	Light olive gray gravelly loam, strong granular structure, neutral
Subsoil		Light gray to grayish brown very gravelly clay loam, moderate subangular blocky structure, slightly to medium acid	Light gray to yellow gravelly silt loam to gravelly clay loam, moderate subangular blocky structure, slightly to medium acid
Substratum			White to very pale brown gravelly silt loam, massive, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		40-60; Mica schist	40-60+; Mica schist
Erosion Factor (K)		.20-.43	.20-.32
Max. Erosion Hazard		Very high	Very high
Soil Permeability		Moderate	Moderate
Soil Drainage		Well	Well
Soil Manageability Class		3-4E	3-4E
Group		III	III
Forest Site Class		3-4	3
Regeneration Potential		Low to moderate	Low to moderate
Available Water Capacity (AWC)		Moderate	High
Upper 20 inches		2.6 inches	2.3 inches
Susceptibility to Burning Damage		Moderate	Moderate
Hydrologic Soil Group		B-C	C
Unified Soil Class		0-60 MH	0-55 MH
Depth Rating			
Potential Failure as Road Subgrade		Yes	Yes
Seeding Recommendations		3	3
Included Areas		20 percent inclusions of Rock outcrop, metasedimentary, soils similar to Albus family, deep, except non-skeletal, soils similar to Race family, deep, except skeletal, and other mesic soils.	

**259 Nanny family, deep-Woodseye family-Bins family, deep association
35 to 70 percent slopes**

Map Unit Components	Nanny family, deep	Woodseye family	Bins family, deep
Approx. Proportion	(30%)	(30%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	White fir	White fir	White fir
Soil Profile Description			
Surface Layer	Very dark grayish brown gravelly loam, weak granular structure, medium acid	Yellowish brown gravelly loam, moderate to strong granular structure, slightly acid	Yellowish brown loam, weak moderate granular structure, slightly acid
Subsoil	Light olive brown very gravelly loam, weak granular structure, very strongly acid	Yellowish brown extremely gravelly loam, moderate to strong granular structure, medium acid	Light olive brown silt loam, mod. subangular blocky structure breaks to mod. gran. struct.,medium to strongly acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	12-20; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.32	.24-.43	.20-.32
Max. Erosion Hazard	High	High	Very high
Soil Permeability	Moderate to moderately rapid	Moderately rapid	Moderate
Soil Drainage	Well	Well to somewhat excessively	Well
Soil Manageability Class	3-4Ep	3-4Ed	3-4E
Group	III	III	III
Forest Site Class	3-4	4-5	3
Regeneration Potential	Low	Low	Low to moderate
Available Water Capacity (AWC)	Low to moderate	Very low to low	Moderate to high
Upper 20 inches	1.4 inches	1.3 inches	2.8 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-60 GC	0-14 ML	0-58 ML
Depth Rating			
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	3	3
Included Areas	20 percent inclusions of Deadman family, deep, Althouse family, mod. deep, and Rock outcrop, metasedimentary		

**260 Skalan-Kistirn-Holland families association, deep
35 to 70 percent slopes**

Map Unit Components	Skalan family, deep	Kistirn family, deep	Holland family, deep
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madron

Soil Profile Description

Surface Layer	Very dark gray to pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown very gravelly loam, weak granular structure, neutral	Pale brown loam, moderate granular structure, medium to strongly acid
Subsoil	Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Light yellowish brown to strong brown very gravelly loam to clay loam, moderate angular blocky structure, strongly acid	Strong brown to reddish yellow clay loam, mod. subangular blocky structure, strongly acid
Substratum		Very pale brown very gravelly silty clay, moderate subangular blocky structure, strongly acid	Reddish yellow very gravelly loam, moderate subangular blocky structure to massive, medium to strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderately slow	Moderate	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4Ep	3-4p	3-4Ep
Group	III	III	III
Forest Site Class	3-4	3-4	3
Regeneration Potential	Moderate	Moderate	Moderate to high
Available Water Capacity (AWC)	Moderate	Moderate	High
Upper 20 inches	1.5 inches	1.9 inches	2.1 inches
Susceptibility to Burning Damage	Moderate	Moderate	Low
Hydrologic Soil Group	B	C	C
Unified Soil Class	0-12 ML	0-53 ML	0-60 ML
Depth Rating	12-56 GC	53-79 GC	
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	2	1	1
Included Areas	25 percent inclusions of Soulaajule and Melbourne families, deep.		

**261 Holland-Goldridge families association, deep
5 to 35 percent slopes**

Map Unit Components	Holland family, deep	Goldridge family, deep
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Benches and broad ridges; 5 to 35; all aspects; 600 to 4000 ft.	Benches and broad ridges; 5 to 35; 600 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown loam, moderate granular structure, medium acid	Light yellowish brown to yellow gravelly loam, moderate granular, strongly to medium acid
Subsoil	Strong brown reddish yellow clay loam, moderate subangular blocky structure, strongly acid	Yellow to very pale brown clay loam, moderate subangular blocky structure, medium acid
Substratum	Reddish yellow very gravelly loam, moderate subangular blocky structure to massive, medium to strongly acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.43
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderate to moderately slow
Soil Drainage	Well	Well
Soil Manageability		
Class	2e	2e
Group	II	II
Forest Site Class	3	2-3
Regeneration Potential	High	High
Available Water Capacity (AWC)	High	High
Upper 20 inches	2.1 inches	2.7 inches
Susceptibility to Burning Damage	Low	Low
Hydrologic Soil Group	C	C
Unified Soil Class	0-60 ML	0-14 ML
Depth Rating		14-43 CL
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	1	1
Included Areas	20 percent inclusions of Skalan, Melbourne, and Soulajule families, deep.	

**265 Clallam-Hugo-Holland families association, deep, dry
35 to 70 percent slopes**

Map Unit Components	Clallam family, deep, dry (35%)	Hugo family, deep, dry (20%)	Holland family, deep, dry (20%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Very pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown to very pale brown loam, moderate granular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid	Light yellowish brown to very pale brown heavy loam to clay loam, moderate subangular blocky structure, medium acid	Strong brown gravelly loam, subangular blocky structure, medium acid
Substratum	Very pale brown very gravelly loam to very gravelly clay loam, massive, strongly acid		Brownish yellow to reddish yellow very gravelly loam, moderate subangular blocky structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary and metaigneous rock	40-60+; metasedimentary and metaigneous rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability			
Class	3-4Ep	3-4E	3-4E
Group	III	III	III
Forest Site Class	4-5	3-4	3-4
Regeneration Potential	Low to very low	Moderate	Moderate
Available Water Capacity (AWC)			
Upper 20 inches	1.4 inches	3.0 inches	2.1 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-60 ML	0-40 ML	0-60 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Deadwood family, Soulajule family, deep, and other soils on slopes over 70 percent.		

**266 Clallam-Hugo-Holland families association, deep
35 to 70 percent slopes**

Map Unit Components	Clallam family, deep	Hugo family, deep	Holland family, deep
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Very pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown to very pale brown loam, moderate granular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid	Light yellowish brown to very pale brown heavy loam to clay loam, moderate subangular blocky structure, medium acid	Strong brown gravelly loam, strong subangular blocky structure, medium acid
Substratum	Very pale brown extremely gravelly loam to extremely gravelly clay loam, massive, strongly acid		Brownish yellow to reddish yellow very gravelly loam, moderate subangular blocky structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary and metaigneous rock	40-60+; metasedimentary and metaigneous rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability			
Class	3-4Ep	3-4E	3-4E
Group	III	III	III
Forest Site Class	4	3	3
Regeneration Potential	Low	Moderate to high	Moderate to high
Available Water Capacity (AWC)			
Upper 20 inches	1.4 inches	3.0 inches	2.1 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	B	B-C
Unified Soil Class	0-60 ML,GC	0-40 ML	0-60 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	NO
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Deadwood family, Soulaajule family, deep, and other soils on slopes over 70 percent.		

**271 Hugo family, moderately deep
30 to 50 percent slopes**

Map Unit Components

Approx. Proportion

Position, Slope, and
Elevation

Typical Vegetation

Hugo family, moderately deep

(80%)

Mountain sideslopes; 30 to 50; all aspects; 400
to 4500 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Pale brown gravelly loam, strong granular
structure, medium acid

Subsoil

Very pale brown loam, weak subangular blocky
structure to moderate granular, strongly acid

Substratum

Light gray gravelly loam, massive, very
strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

20-40; metasedimentary rock

Erosion Factor (K)

.15-.28

Max. Erosion Hazard

High

Soil Permeability

Moderate

Soil Drainage

Well

Soil Manageability

Class

3Ep

Group

III

Forest Site Class

3-4

Regeneration Potential

Moderate to high

Available Water
Capacity (AWC)

Moderate to high

Upper 20 inches

2.6 inches

Susceptibility to
Burning Damage

Low to moderate

Hydrologic Soil Group

B

Unified Soil Class
Depth Rating

0-24 ML

Potential Failure as
Road Subgrade

No

Seeding
Recommendations

1

Included Areas

20 percent inclusions of Clallam family, mod. deep and Goldridge family, deep.

**272 Hugo family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Hugo family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability	
Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**273 Hugo family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Hugo family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**274 Hugo family, moderately deep-Rock outcrop, metasedimentary complex
50 to 70 percent slopes**

Map Unit Components	Hugo family, moderately deep	Rock outcrop, metasedimentary
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.	Mountain sideslopes and cliffs; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.15-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	3-4E	
Group	III-IV	
Forest Site Class	3-4	
Regeneration Potential	Moderate to high	
Available Water Capacity (AWC)	Moderate to high	
Upper 20 inches	2.6 inches	
Susceptibility to Burning Damage	Low to moderate	
Hydrologic Soil Group	B	D
Unified Soil Class	0-24 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Clallam family, mod. deep and Deadwood family.	

**280 Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop
metasedimentary association
45 to 85 percent slopes**

Map Unit Components	Deadwood family	Clallam family, deep, ext. gravelly	Rock outcrop, metasedimentary
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Colluvial mountain sideslopes and ridges; 45 to 85; all aspects; 600 to 4500 ft.	Colluvial mountain sideslopes; 45 to 70; NW to E; 600 to 4500 ft.	Mountain sideslopes and cliffs; SE to W; 600 to 4800 ft.
Typical Vegetation	Canyon live oak	Canyon live oak	Barren
Soil Profile Description			
Surface Layer	Dark brown very gravelly loam, moderate granular structure, slightly acid	Light brownish gray extremely gravelly loam, weak granular structure, neutral	
Subsoil	Yellowish brown very gravelly loam, weak subangular blocky to moderate granular structure, medium acid	Light gray to white extremely gravelly loam, weak subangular blocky structure, neutral	
Substratum		Very pale brown extremely gravelly loam, weak granular structure, neutral	
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	10-20; sedimentary, metasedimentary, and metaigneous rock	40-60+; sedimentary, metasedimentary, and metaigneous rock	
Erosion Factor (K)	.20-.37	.17-.24	
Max. Erosion Hazard	Very high	Moderate	
Soil Permeability	Moderately rapid to rapid	Moderately rapid to rapid	
Soil Drainage	Somewhat excessively	Somewhat excessively	
Soil Manageability Class	3-4GE	3-4GP	
Group	IV	IV	
Forest Site Class	5-6	5	
Regeneration Potential	Low	Low	
Available Water Capacity (AWC)	Very low	Very low to low	
Upper 20 inches	1.7 inches	0.7 inches	
Susceptibility to Burning Damage	Moderate	High	
Hydrologic Soil Group	C	C	D
Unified Soil Class	0-9 ML	0-60 GC	
Depth Rating	9-19 GC		
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	
Included Areas	25 percent inclusions of Skalan family, mod. deep, soils similar to Clallam family, deep, extremely gravelly, except more developed, and soils similar to Holland family, deep, except mod. deep.		

**281 Clallam family, deep, extremely gravelly-Deadwood family assoication
35 to 75 percent slopes**

Map Unit Components	Clallam family, deep, ext. gravelly	Deadwood family
Approx. Proportion	(45%)	(30%)
Position, Slope, and Elevation	Colluvial mountain sideslopes; 35 to 75; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Colluvial mountain sideslopes and ridges; 35 to 70; NW to E, 600 to 4500 ft; SE to W, 600 to 4800 ft.
Typical Vegetation	Canyon live oak	Canyon live oak
Soil Profile Description		
Surface Layer	Light brownish gray extremely gravelly loam, weak granular structure, neutral	Dark brown very gravelly loam, moderate granular structure, slightly acid
Subsoil	Light gray to white extremely gravelly loam, weak subangular blocky structure, neutral	Yellowish brown very gravelly loam, weak subangular blocky to moderate granular structure, medium acid
Substratum	Very pale brown extremely gravelly loam, weak granular structure, neutral	
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	10-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.17-.24	.20-.37
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderately rapid to rapid	Moderate to rapid
Soil Drainage	Somewhat excessively	Well to somewhat excessively
Soil Manageability Class	3-4G	3-4Ed
Group	IV	IV
Forest Site Class	5	5-6
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low to low	Very low
Upper 20 inches	0.7 inches	1.7 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C	C
Unified Soil Class	0-60 GC	0-9 ML
Depth Rating		9-16 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Holland family, deep, Skalan family, mod. deep, and other soils on slopes over 70 percent.	

**282 Deadwood family-Rock outcrop, metasedimentary-Voorhies family
moderately deep association
40 to 85 percent slopes**

Map Unit Components	Deadwood family	Rock outcrop, metasedimentary	Voorhies family, mod. deep
Approx. Proportion	(30%)	(30%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 40 to 75; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.	Mountain sideslopes and cliffs; SE to W, 2000 to 4800 ft. 2000 to 4800 ft.	Mountain sideslopes; 40 to 80; NW to E, 2000 to 4500 ft.; SE to W,
Typical Vegetation	Canyon live oak	Barren	Canyon live oak
Soil Profile Description			
Surface Layer	Dark brown very gravelly loam, moderate granular structure, slightly acid		Pale brown gravelly loam, moderate subangular blocky structure, slightly acid
Subsoil	Yellowish brown very gravelly weak subangular blocky to moderate structure, medium acid		Light yellowish brown to very loam, pale brown gravelly to very gravelly clay granular loam to clay, moderate subangular blocky slightly to medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	10-20; sedimentary and metasedimentary rock		20-40; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.37		.20-.24
Max. Erosion Hazard	High		Very high
Soil Permeability	Moderate to rapid		Moderate to moderately slow
Soil Drainage	Well to somewhat excessively		Well to moderately well
Soil Manageability			
Class	3-4GE		3-4GE
Group	IV		IV
Forest Site Class	5-6		3-4
Regeneration Potential	Low		Low
Available Water Capacity (AWC)	Very low		Moderate
Upper 20 inches	1.7 inches		2.3 inches
Susceptibility to Burning Damage	High		Moderate
Hydrologic Soil Group	C	D	B-C
Unified Soil Class	0-9 ML		0-26 GC
Depth Rating	9-16 GC		
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1		1
Included Areas	20 percent inclusions of Clallam and Hecker families, deep, and Skalan family, mod. deep.		

300 Rock outcrop, metaigneous-Lithic Xerorthents complex, metaigneous 60 to 90 percent slopes

Map Unit Components

Approx. Proportion

Position, Slope, and Elevation

Typical Vegetation

Rock outcrop, metaigneous

(40%)

Ridges and mountain sideslopes; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Barren

Lithic Xerorthents

(30%)

Ridges and mountain sideslopes; 60 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Very gravelly sandy loam, weak granular structure, medium acid

Subsoil

Very gravelly sandy loam, single grain, medium acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material

10-20; metaigneous and metasedimentary rock

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Rapid

Soil Drainage

Somewhat excessively

Soil Manageability

Class

4Gd

Group

IV

Forest Site Class

6-7

Regeneration Potential

Low

Available Water Capacity (AWC)

Very low

Upper 20 inches

<1.2 inches

Susceptibility to Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

D

C

Unified Soil Class Depth Rating

Onsite Investigations Required

Potential Failure as Road Subgrade

No

No

Seeding Recommendations

Onsite Investigations Required

Included Areas

30 percent inclusions of Raisio family, mod. deep and frigid soils.

**301 Rock outcrop, metaigneous-Lithic Xerorthents complex, metaigneous
60 to 90 percent slopes**

Map Unit Components	Rock outcrop, metaigneous	Lithic Xerorthents
Approx. Proportion	(40%)	(30%)
Position, Slope, and Elevation	Ridges and mountain sideslopes; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Ridges and mountain sideslopes; 60 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Barren	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Very gravelly sandy loam, weak granular structure, medium acid
Subsoil	Very gravelly sandy loam, single grain, medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material and metasedimentary rock	10-20; metaigneous
Erosion Factor (K)	Onsite Investigations Required
Max. Erosion Hazard	Onsite Investigations Required
Soil Permeability	Rapid
Soil Drainage	Somewhat excessively
Soil Manageability Class	4Gd
Group	IV
Forest Site Class	6-7
Regeneration Potential	Low
Available Water Capacity (AWC)	Very low
Upper 20 inches	<1.2 inches
Susceptibility to Burning Damage	Onsite Investigations Required
Hydrologic Soil Group	D
Unified Soil Class	C
Depth Rating	Onsite Investigations Required
Potential Failure as Road Subgrade	No
Seeding Recommendations	Onsite Investigations Required
Included Areas	30 percent inclusions of Raisio family, mod. deep and frigid soils.

**311 Holland family, deep
30 to 50 percent slopes**

Map Unit Components	Holland family, deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Strong brown loam, moderate granular structure, strongly acid
Subsoil	Reddish yellow clay loam, moderate subangular blocky structure, strongly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; metaigneous rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderately slow
Soil Drainage	Well
Soil Manageability	
Class	3E
Group	III
Forest Site Class	3
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	High
Upper 20 inches	2.1 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B-C
Unified Soil Class	0-60 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Aiken family, deep, Hugo family, mod. deep, soils similiar to Holland family, deep except mod. deep , and soils on slopes less than 30 percent.

**312 Holland family, deep
30 to 50 percent slopes**

Map Unit Components

Approx. Proportion

Position, Slope, and
Elevation

Typical Vegetation

Holland family, deep

(85%)

Mountain sideslopes; 30 to 50; all aspects; 1000
to 3500 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Strong brown loam, moderate granular
structure, strongly acid

Subsoil

Reddish yellow clay loam, moderate subangular
blocky structure, strongly acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

40-60; metaigneous rock

Erosion Factor (K)

.20-.28

Max. Erosion Hazard

High

Soil Permeability

Moderately slow

Soil Drainage

Well

Soil Manageability

Class

3E

Group

III

Forest Site Class

3

Regeneration Potential

Moderate to high

Available Water
Capacity (AWC)

High

Upper 20 inches

2.1 inches

Susceptibility to
Burning Damage

Moderate

Hydrologic Soil Group

B-C

Unified Soil Class
Depth Rating

0-60 ML

Potential Failure as
Road Subgrade

No

Seeding

1

Recommendations

Included Areas

15 percent inclusions of Aiken family, deep, Hugo family, mod. deep, soils similiar to Holland family, deep except mod. deep , and soils on slopes less than 30 percent.

**315 Aiken-Holland families complex, deep
10 to 40 percent slopes**

Map Unit Components	Aiken family, deep	Holland family, deep
Approx. Proportion	(55%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 10 to 40; all aspects; 1500 to 3500 ft.	Mountain sideslopes; 10 to 40; all aspects; 1500 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Brown to dark brown loam, moderate subangular blocky structure, slightly acid	Strong brown loam, moderate granular structure, strongly acid
Subsoil	Brown to reddish yellow clay to heavy clay loam, moderate angular blocky structure, slightly to medium acid	Reddish yellow clay loam, moderate subangular blocky structure, strongly acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	60+; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.20-.37	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	2-3E	2-3E
Group	II	II
Forest Site Class	3	3
Regeneration Potential	High	Moderate to high
Available Water Capacity (AWC)	High to very high	High
Upper 20 inches	3.2 inches	2.1 inches
Susceptibility to Burning Damage	Low	Low
Hydrologic Soil Group	C	B-C
Unified Soil Class	0-7 CL	0-60 ML
Depth Rating	7-67 CL,CH	
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	1	1
Included Areas	10 percent inclusions of Hugo family, deep and soils on slopes less than 10 percent and greater than 40 percent.	

**316 Aiken-Holland families complex, deep
10 to 40 percent slopes**

Map Unit Components		Aiken family, deep	Holland family, deep
Approx. Proportion		(55%)	(35%)
Position, Slope, and Elevation		Mountain sideslopes; 10 to 40; all aspects; 1500 to 3500 ft.	Mountain sideslopes; 10 to 40; all aspects; 1500 to 3500 ft.
Typical Vegetation		Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer		Brown to dark brown loam, moderate subangular blocky structure, slightly acid	Strong brown loam, moderate granular structure strongly acid
Subsoil		Brown to reddish yellow clay to heavy clay loam, moderate angular blocky structure, slightly to medium acid	Reddish yellow clay loam, moderate subangular blocky structure, strongly acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		60+; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)		.20-.37	.20-.28
Max. Erosion Hazard		High	High
Soil Permeability		Moderately slow	Moderately slow
Soil Drainage		Well	Well
Soil Manageability Class		2-3E	2-3E
Group		II	II
Forest Site Class		3	3
Regeneration Potential		High	Moderate to high
Available Water Capacity (AWC)		High to very high	High
Upper 20 inches		3.2 inches	2.1 inches
Susceptibility to Burning Damage		Low	Low
Hydrologic Soil Group		C	B-C
Unified Soil Class		0-7 CL	0-60 ML
Depth Rating		7-67 CL,CH	
Potential Failure as Road Subgrade		Yes	No
Seeding Recommendations		1	1
Included Areas		10 percent inclusions of Hugo family, deep and soils on slopes less than 10 percent and greater than 40 percent.	

**317 Nanny family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Nanny family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 4500 to 6000 ft.
Typical Vegetation	White fir

Soil Profile Description

Surface Layer	Very dark grayish brown very gravelly loam, weak granular structure, medium acid
Subsoil	Light olive brown very gravelly loam, very weak granular structure, very strongly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metaigneous rock
Erosion Factor (K)	.20-.32
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Somewhat excessively
Soil Manageability Class	3-4GE
Group	IV
Forest Site Class	3-4
Regeneration Potential	Low
Available Water Capacity (AWC)	Low
Upper 20 inches	1.4 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B
Unified Soil Class	0-35 GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Woodseye family, soils similar to Bins family, deep, except mod. deep, and Rock outcrop, metaigneous

**318 Nanny family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Nanny family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 4500 to 6000 ft.
Typical Vegetation	White fir

Soil Profile Description

Surface Layer	Very dark grayish brown very gravelly loam, weak granular structure, medium acid
Subsoil	Light olive brown very gravelly loam, very weak granular structure, very strongly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metaigneous rock
Erosion Factor (K)	.20-.32
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Somewhat excessively
Soil Manageability Class	3-4GE
Group	IV
Forest Site Class	3-4
Regeneration Potential	Low
Available Water Capacity (AWC)	Low
Upper 20 inches	1.4 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B
Unified Soil Class	0-35 GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Woodseye family, soils similar to Bins family, deep, except mod. deep, and Rock outcrop, metaigneous

**320 Hugo family, moderately deep-Maymen family, complex
30 to 50 percent slopes**

Map Unit Components		Hugo family, mod. deep	Maymen family
Approx. Proportion		(65%)	(20%)
Position, Slope, and Elevation		Mountain sideslopes; 30 to 50; all aspects; 400 to 4500 ft.	Mountain sideslopes; 30 to 50; all aspects; 400 to 4500 ft.
Typical Vegetation		Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer		Pale brown gravelly loam, strong granular structure, medium acid	Brown gravelly loam, moderate granular structure, medium acid
Subsoil		Very pale brown gravelly loam, moderate subangular blocky structure, medium acid	Light yellow brown gravelly loam, weak subangular blocky structure, strongly acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		20-40; metaigneous rock	10-20; metaigneous rock
Erosion Factor (K)		.15-.28	.20-.28
Max. Erosion Hazard		High	High
Soil Permeability		Moderate	Moderate
Soil Drainage		Well	Well
Soil Manageability Class		3E	3Ed
Group		III	III
Forest Site Class		3-4	5
Regeneration Potential		Moderate	Low
Available Water Capacity (AWC)		Low to moderate	Very low to low
Upper 20 inches		2.6 inches	1.9 inches
Susceptibility to Burning Damage		Moderate	Moderate
Hydrologic Soil Group		B-C	C
Unified Soil Class		0-24 ML	0-18 ML
Depth Rating			
Potential Failure as Road Subgrade		No	No
Seeding Recommendations		1	1
Included Areas		15 percent inclusions of rubble land and Rock outcrop, metaigneous.	

**321 Hugo family, moderately deep-Maymen family complex
50 to 70 percent slopes**

Map Unit Components	Hugo family, mod. deep	Maymen family
Approx. Proportion	(50%)	(25%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid	Brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Light yellow brown gravelly loam, weak subangular blocky structure, strongly acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; metaigneous rock	10-20; metaigneous rock
Erosion Factor (K)	.15-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability		
Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	3-4	5
Regeneration Potential	Moderate	Low
Available Water Capacity (AWC)		
Upper 20 inches	2.6 inches	1.9 inches
Susceptibility to Burning Damage	Moderate to high	Moderate to high
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-24 ML	0-18 ML
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Rubble land, Rock outcrop, metaigneous, and soils on slopes less than 70 percent.	

**322 Maymen family-Rock outcrop, metaigneous complex
70 to 90 percent slopes**

Map Unit Components	Maymen family	Rock outcrop, metaigneous
Approx. Proportion	(50%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4500 ft.	Mountain sideslopes; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Brown gravelly loam, moderate granular structure, medium acid
Subsoil	Light yellow brown gravelly loam, weak subangular blocky structure, strongly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	10-20; metaigneous rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	3-4GE	
Group	IV	
Forest Site Class	5	
Regeneration Potential	Low	
Available Water Capacity (AWC)	Very low to low	
Upper 20 inches	1.9 inches	
Susceptibility to Burning Damage	Moderate to high	
Hydrologic Soil Group	C	D
Unified Soil Class	0-18 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of rubble land and soils on slopes over 70 percent.	

323 Maymen family-Rock outcrop, metaigneous complex
70 to 90 percent slopes

Map Unit Components	Maymen family	Rock outcrop, metaigneous
Approx. Proportion	(50%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4500 ft.	Mountain sideslopes; all aspects; 400 to 4500 f
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Brown gravelly loam, moderate granular structure, medium acid
Subsoil	Light yellow brown gravelly loam, weak subangular blocky structure, strongly acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	10-20; metaigneous rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	3-4GE	
Group	IV	
Forest Site Class	5	
Regeneration Potential	Low	
Available Water Capacity (AWC)	Very low to low	
Upper 20 inches	1.9 inches	
Susceptibility to Burning Damage	Moderate to high	
Hydrologic Soil Group	C	D
Unified Soil Class	0-18 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of rubble land and soils on slopes over 70 percent.	

**324 Hugo family, deep
30 to 50 percent slopes**

Map Unit Components	Hugo family, deep
Approx. Proportion	(90%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Light yellowish brown to brown gravelly loam, moderate granular structure, medium acid
Subsoil	Brownish yellow to yellow heavy silt loam, moderate subangular blocky structure, medium acid
Substratum	Brownish yellow very gravelly heavy silt loam, weak subangular blocky structure to massive, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; metaigneous rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability	
Class	3E
Group	III
Forest Site Class	3
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate
Upper 20 inches	3.0 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B
Unified Soil Class	0-40 ML
Depth Rating	40-60 GC
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	10 percent inclusions of Holland family, deep and Hugo family, mod. deep.

**325 Hugo family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Hugo family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**326 Hugo family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Hugo family, moderately deep
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability	
Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**327 Hugo family, moderately deep-Holland family, deep complex
30 to 50 percent slopes**

Map Unit Components	Hugo family, mod. deep	Holland family, deep
	(50%)	(30%)
Approx. Proportion		
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 400 to 4500 ft.	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid	Pale brown loam, moderate granular structure, strongly acid
Subsoil	Very pale brown gravelly heavy loam, moderate granular structure, strongly acid	Strong brown to reddish yellow clay loam, strong subangular blocky structure, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid	
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.15-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	3E	3E
Group	III	III
Forest Site Class	3-4	3
Regeneration Potential	Moderate to high	Moderate to high
Available Water Capacity (AWC)	Low to moderate	Moderate to high
Upper 20 inches	2.6 inches	2.1 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	B-C	B
Unified Soil Class	0-24 ML	0-60 ML
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	20 percent inclusions of Hugo family, deep and soils similar to Holland family, deep, except mod. deep.	

**331 Clallam family, moderately deep-Skalan family, deep association
35 to 75 percent slopes**

Map Unit Components	Clallam family, mod. deep	Skalan family, deep
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 75; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Upper mountain sideslopes; 35 to 55; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Brown to very dark grayish brown very gravelly loam, moderate subangular blocky structure, medium acid	Very dark gray to pale brown gravelly loam, weak to moderate granular structure, strongly acid
Subsoil	Brown to yellowish red very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Pink to reddish brown very gravelly clay loam, moderate subangular blocky structure, medium to strongly acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.20-.28	.20-.37
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3Ep
Group	IV	IV
Forest Site Class	4	3-4
Regeneration Potential	Low to moderate	Moderate
Available Water Capacity (AWC)	Low	Moderate
Upper 20 inches	1.7 inches	1.5 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	B-C	B-C
Unified Soil Class	0-26 ML,GC	0-12 ML
Depth Rating		12-56 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	20 percent inclusions of Skalan family, mod. deep, Clallam family, deep, and Rock outcrop, metaigneous.	

**335 Althouse-Holland families association, deep, stony
30 to 70 percent slopes**

Map Unit Components	Althouse family, deep, stony	Holland family, deep, stony
Approx. Proportion	(45%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes and glacial moraines; 30 to 70; NW to E, 3800 to 6000 ft.; SE to W, 4500 to 6000 ft.	Colluvial mountain sideslopes; 30 to 50; NW to E, 3000 to 3800 ft.; SE to W, 3000 to 4500 ft.
Typical Vegetation	Mixed Conifer-Fir	Canyon live oak

Soil Profile Description

Surface Layer	Yellowish brown gravelly loam, strong granular structure, medium acid	Yellowish brown stony loam, weak granular structure, slightly acid
Subsoil	Yellowish brown very gravelly loam, weak subangular blocky structure, medium acid	Brownish yellow to strong brown clay loam, moderate subangular blocky structure, slightly acid
Substratum	Light yellowish brown gravelly loam, weak subangular blocky structure, slightly acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; metaigneous rock and glacial till	40-60+; metaigneous rock colluvium
Erosion Factor (K)	.20-.32	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GX	3X
Group	III	III
Forest Site Class	4-5	4-5
Regeneration Potential	Low	Moderate
Available Water Capacity (AWC)	Low	Moderate
Upper 20 inches	2.2 inches	2.5 inches
Susceptibility to Burning Damage	Moderate to high	Moderate
Hydrologic Soil Group	C	C
Unified Soil Class	0-35 ML	0-45 ML
Depth Rating	35-39 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	25 percent inclusions of soils similar to Althouse and Holland families, deep, stony, except mod. deep, Nanny and Chaix families, mod. deep, Rock outcrop, metaigneous, and soils on slopes less than 30 percent.	

**336 Clallam-Nanny families association, deep
30 to 60 percent slopes**

Map Unit Components	Clallam family, deep	Nanny family, deep
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Colluvial mountain sideslopes and near drainages; 30 to 60; NW to E, 3000 to 3500 ft.; SE to W, 3000 to 4500 ft.	Colluvial mountain sideslopes; 30 to 60; NW to E, 3800 to 6000 ft.
Typical Vegetation	Mixed Conifer-Fir	Mixed Conifer-Fir
Soil Profile Description		
Surface Layer	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid	Very dark grayish brown gravelly loam, weak granular structure, slightly acid
Subsoil	Very pale brown to yellow very gravelly loam, strong subangular blocky structure, strongly acid	Brown to very pale brown gravelly to very gravelly loam to light clay loam, weak subangular blocky structure, slightly to medium acid
Substratum	Very pale brown to yellow extremely gravelly loam, massive, strongly acid	
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.20-.28	.20-.32
Max. Erosion Hazard	High	High
Soil Permeability	Moderately rapid	Moderately rapid
Soil Drainage	Well	Well
Soil Manageability		
Class	3Ep	3Ep
Group	III	III
Forest Site Class	4	3-4
Regeneration Potential	Low	Moderate
Available Water Capacity (AWC)	Low	Moderate
Upper 20 inches	1.4 inches	1.4 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	B	C
Unified Soil Class	0-60 ML,GC	0-60 GC
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	3
Included Areas	20 percent inclusions of soils similar to Clallam and Nanny family, mod. deep, except stony, Skymor family, and soils on slopes less than 30 percent.	

**340 Clallam family, moderately deep-Rock outcrop, metaigneous complex
45 to 80 percent slopes**

Map Unit Components	Clallam family, mod. deep	Rock outcrop, metaigneous
Approx. Proportion	(50%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 45 to 80; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

Soil Profile Description

Surface Layer	Brown to very dark grayish brown gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Brown to yellowish red very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metaigneous rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	3-4GE	
Group	IV	
Forest Site Class	4	
Regeneration Potential	Moderate to low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	Moderate	
Hydrologic Soil Group	B-C	D
Unified Soil Class	0-26 ML,GC	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	30 percent inclusions of Maymen family, Deadwood family, and Hugo family, mod. deep.	

**344 Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop
metasedimentary association
45 to 85 percent slopes**

Map Unit Components	Deadwood family	Clallam family, deep, ext. gravelly	Rock outcrop, metasedimentary
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Colluvial mountain sideslopes and ridges; 45 to 85; all aspects; 600 to 4500 ft.	Colluvial mountain sideslopes; 45 to 70; NW to E; 600 to 4500 ft.	Mountain sideslopes and cliffs; SE to W; 600 to 4800 ft.
Typical Vegetation	Canyon live oak	Canyon live oak	Barren
Soil Profile Description			
Surface Layer	Dark brown very gravelly loam, moderate granular structure, slightly acid	Light brownish gray extremely gravelly loam, weak granular structure, neutral	
Subsoil	Yellowish brown very gravelly loam, weak subangular blocky to moderate granular structure, medium acid	Light gray to white extremely gravelly loam, weak subangular blocky structure, neutral	
Substratum		Very pale brown extremely gravelly loam, weak granular structure, neutral	
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	10-20; sedimentary, metasedimentary, and metaigneous rock	40-60+; sedimentary, metasedimentary, and metaigneous rock	
Erosion Factor (K)	.20-.37	.17-.24	
Max. Erosion Hazard	Very high	Moderate	
Soil Permeability	Moderately rapid to rapid	Moderately rapid to rapid	
Soil Drainage	Somewhat excessively	Somewhat excessively	
Soil Manageability			
Class	3-4GE	3-4GP	
Group	IV	IV	
Forest Site Class	5-6	5	
Regeneration Potential	Low	Low	
Available Water Capacity (AWC)			
Upper 20 inches	1.7 inches	0.7 inches	
Susceptibility to Burning Damage	Moderate	High	
Hydrologic Soil Group	C	C	D
Unified Soil Class	0-9 ML	0-60 GC	
Depth Rating	9-19 GC		
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	
Included Areas	25 percent inclusions of Skalan family, mod. deep, soils similar to Clallam family, deep, extremely gravelly, except more developed, and soils similar to Holland family, deep, except mod. deep.		

**345 Clallam family, deep, extremely gravelly-Skalan-Goldridge families, deep association
35 to 70 percent slopes**

Map Unit Components	Clallam family, deep, ex. gravelly (40%)	Skalan family, deep (20%)	Goldridge family, deep (20%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes; 35 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes; 35 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Light yellowish brown to light brownish gray extremely gravelly loam, weak granular structure, sl. acid to neutral	Very dark gray to pale brown very gravelly loam, weak granular structure, strongly acid	Light yellowish brown to pale brown gravelly loam, moderate granular structure, medium to slightly acid
Subsoil	White to yellow very gravelly loam, weak subangular structure, slightly acid to neutral	Pale brown dark reddish brown very gravelly loam to very gravelly clay loam, mod. subang. blocky struct., med. to strongly acid	Light yellowish brown to very pale brown grav. loam to grav. clay loam, mod. subang. blocky struct., sl. to med. acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	40-60; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.17-.24	.20-.37	.20-.43
Max. Erosion Hazard	Moderate	High	High
Soil Permeability	Moderate to moderately rapid	Moderately slow	Moderate to moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4Gp	3-4GE	3-4GE
Group	III	III	III
Forest Site Class	5	3-4	2-3
Regeneration Potential	Very low to low	Low to moderate	Moderate to high
Available Water Capacity (AWC)	Very low to low	Moderate	Moderate to high
Upper 20 inches	0.7 inches	1.5 inches	2.7 inches
Susceptibility to Burning Damage	High	Moderate	Low
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-60 GC	0-12 ML	0-14 ML
Depth Rating		12-56 GC	14-43 CL
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	1	2	1
Included Areas	20 percent inclusions of Deadwood family, Holland and Clallam families, mod. deep, and soils similar to Skalan and Goldridge families, deep except moderately deep.		

**346 Goldridge family, deep-Clallam family, moderately deep-Aiken family, deep association
40 to 90 percent slopes**

Map Unit Components	Goldridge family, deep (30%)	Clallam family, mod. deep (20%)	Aiken family, deep (20%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 40 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes; 60 to 90; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes; 40 to 50; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Light yellowish brown to pale brown gravelly loam, moderate granular structure, medium to slightly acid	Dark grayish brown to brown loam, moderate subangular blocky structure, medium acid	Dark brown loam, mod. subangular blocky structure, slightly acid
Subsoil	Light yellowish brown to very pale brown gravelly loam to clay loam, mod. subangular blocky structure, slightly to med. acid	Reddish yellow to yellowish red loam, moderate subangular blocky structure, medium acid	Yellowish red to strong brown silty clay loam to clay, moderate angular blocky structure, slightly to medium acid
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	20-40; metaigneous rock	40-60+; metaigneous rock
Erosion Factor (K)	.20-.43	.20-.28	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow	Moderate to slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4GE	4GE	3E
Group	III	III	III
Forest Site Class	2-3	4	3
Regeneration Potential	Moderate to high	Moderate to low	High
Available Water Capacity (AWC)	Moderate to high	Low	High
Upper 20 inches	2.7 inches	1.7 inches	3.2 inches
Susceptibility to Burning Damage	Low	Moderate	High
Hydrologic Soil Group	C	B-C	D
Unified Soil Class	0-14 ML	0-26 ML,GC	0-7 CL
Depth Rating	14-43 CL		7-67 CL,CH
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	1	1	1
Included Areas	30 percent inclusions of Deadwood family, Hullt family, deep, and soils similar to Goldridge family, deep, except mod. deep.		

**348 Skalan-Aiken families association, deep
5 to 40 percent slopes**

Map Unit Components	Skalan family, deep	Aiken family, deep
Approx. Proportion	(35%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and broad ridges; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Knobcone Pine	Knobcone Pine
Soil Profile Description		
Surface Layer	Very dark gray very gravelly loam, weak granular structure, strongly acid	Dark brown to reddish yellow clay loam, moderate subangular blocky structure, slightly to strongly acid
Subsoil	Pale brown to dark reddish brown very gravelly loam to very gravelly clay loam, mod. subangular blocky struct., med. to strongly acid	Reddish yellow to strong brown silty clay loam to clay, moderate angular blocky structure, slightly to medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	40-60+; metaigneous rock
Erosion Factor (K)	.20-.37	.20-.37
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderate to slow
Soil Drainage	Well	Well
Soil Manageability Class	2-3Ep	2-3E
Group	II	II
Forest Site Class	3-4	3
Regeneration Potential	Moderate	High
Available Water Capacity (AWC)	Moderate	High
Upper 20 inches	1.5 inches	3.2 inches
Susceptibility to Burning Damage	Moderate	High
Hydrologic Soil Group	B	D
Unified Soil Class	0-12 ML	0-7 CL
Depth Rating	12-56 GC	7-67 CL, CH
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	2	1
Included Areas	30 percent inclusions of Goldridge and Holland families, deep, and soils similar to Holland family, mod. deep, except less than 20 inches deep.	

**349 Goldridge-Aiken families association, deep
5 to 40 percent slopes**

Map Unit Components	Goldridge family, deep	Aiken family, deep
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Mountain sideslopes; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and broad ridges; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Light yellowish brown to dark brown gravelly loam, moderate granular structure, medium acid	Dark brown heavy loam, moderate subangular blocky structure, slightly acid
Subsoil	Light yellowish brown to yellowish red clay loam, moderate to strong subangular blocky structure, medium acid	Reddish yellow to strong brown silty clay loam to clay, moderate angular blocky structure, slightly to medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	40-60; metaigneous rock
Erosion Factor (K)	.20-.43	.20-.37
Max. Erosion Hazard	High	High
Soil Permeability	Moderate to moderately slow	Moderate
Soil Drainage	Well	Well
Soil Manageability		
Class	2-3E	2-3E
Group	II	II
Forest Site Class	2-3	3
Regeneration Potential	Moderate to high	High
Available Water Capacity (AWC)		
Upper 20 inches	2.7 inches	3.2 inches
Susceptibility to Burning Damage	Low	Low
Hydrologic Soil Group	C	D
Unified Soil Class	0-14 ML	0-7 CL
Depth Rating	14-43 CL	7-67 CL, CH
Potential Failure as Road Subgrade	Yes	Yes
Seeding Recommendations	1	1
Included Areas	20 percent inclusions of Skalan family, deep, and soils similar to Goldridge family, deep, except mod. deep.	

**351 Skalan-Holland families association, deep
20 to 65 percent slopes**

Map Unit Components			
Approx. Proportion	Skalan family, deep (40%)	Holland family, deep (35%)	
Position, Slope, and Elevation	Narrow ridges and mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Benches and broad ridges; 20 to 40; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	
Soil Profile Description			
Surface Layer	Very dark gray to pale brown gravelly loam, weak granular structure, strongly acid	Pale brown gravelly loam, moderate granular structure, slightly to strongly acid	
Subsoil	Pale brown to dark reddish brown very gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Strong brown to reddish yellow gravelly heavy loam to gravelly clay loam, moderate strong subangular blocky structure, medium to strongly acid	
Substratum			
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; metaigneous rock	40-60; metaigneous rock	
Erosion Factor (K)	.20-.37	.20-.28	
Max. Erosion Hazard	High	High	
Soil Permeability	Moderately slow	Moderately slow	
Soil Drainage	Well	Well	
Soil Manageability Class	3Ep	3E	
Group	III	III	
Forest Site Class	3-4	3	
Regeneration Potential	Moderate	Moderate to high	
Available Water Capacity (AWC)	Moderate	High	
Upper 20 inches	1.5 inches	2.1 inches	
Susceptibility to Burning Damage	Moderate	Low	
Hydrologic Soil Group	C	C	
Unified Soil Class	0-12 ML	0-60 ML	
Depth Rating	12-56 GC		
Potential Failure as Road Subgrade	No	No	
Seeding Recommendations	2	2	
Included Areas	25 percent inclusions of Clallam and Aiken families, deep, and soils similar to Skalan family, deep except mod. deep.		

**356 Raisio-Clallam families complex, moderately deep
45 to 75 percent slopes**

Map Unit Components	Raisio family, mod. deep	Clallam family, mod. deep
Approx. Proportion	(50%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes; 45 to 75; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 45 to 75; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Dark grayish brown very gravelly sandy loam, weak granular structure, strongly acid	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil		Reddish yellow to yellowish red very gravelly loam, moderate subangular blocky structure, slightly to medium acid
Substratum	Yellowish brown to brown very gravelly sandy loam, single grain, slightly to medium acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metaigneous rock	20-40; metaigneous rock
Erosion Factor (K)	.15-.17	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderately rapid	Moderate
Soil Drainage	Somewhat excessively	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	4	4
Regeneration Potential	Moderate	Moderate
Available Water Capacity (AWC)	Very low	Low
Upper 20 inches	1.2 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	C
Unified Soil Class	0-6 SC	0-26 ML,GC
Depth Rating	6-25 GW	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	20 percent inclusions of soils similar to Raisio family, mod. deep, except less than 20 inches deep, Rock outcrop, metaigneous, and colluvial material.	

**360 Holland family, deep-Clallam family, moderately deep-Cotati family,
deep association, gabbroic
20 to 65 percent slopes**

Map Unit Components	Holland family, deep, gabbroic (30%)	Clallam family, mod. deep, gabbroic (25%)	Cotati family, deep, gabbroic (15%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 40 to 65; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Strong brown loam, moderate subangular blocky structure, strongly acid	Brownish yellow very gravelly loam, weak granular structure, medium acid	Very pale brown gravelly loam moderate granular structure, medium acid
Subsoil	Yellowish brown to brownish yellow clay loam to gravelly loam, moderate subangular blocky structure, med. to strongly acid	Very pale brown blocky sandy clay loam, weak to moderate subangular blocky structure, medium acid	Yellow clay loam to clay, strong subangular to angular blocky structure, medium acid
Substratum	Very pale brown gravelly loam to sandy loam, weak subangular blocky structure to massive, strongly acid		Very pale brown loam, weak subangular blocky structure, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; gabbro rock	20-40; gabbro rock	40-60; gabbro rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate to moderately rapid
Soil Drainage	Well	Well	Well
Soil Manageability Class	2-3E	3Ep	2-3E
Group	III	III	III
Forest Site Class	4-5	4-5	4
Regeneration Potential	Low to moderate	Low	Low to moderate
Available Water Capacity (AWC)	Moderate	Low	High
Upper 20 inches	2.8 inches	1.4 inches	3.0 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	C	C	C
Unified Soil Class	0-50 ML	0-36 ML	0-7 ML
Depth Rating	50-60 SC		7-22 CH 22-60 ML
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	1	2	1
Included Areas	30 percent inclusions of soils similar to Skalan and Clallam families, deep, except on gabbro, and soils on slopes less than 20 percent and over 65 percent.		

**361 Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic
20 to 65 percent slopes**

Map Unit Components	Holland family, deep, gabbroic (30%)	Clallam family, mod. deep, gabbroic (25%)	Cotati family, deep, gabbroic (15%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 40 to 65; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description			
Surface Layer	Strong brown loam, moderate subangular blocky structure, strongly acid	Brownish yellow very gravelly loam, weak granular structure, medium acid	Very pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellowish brown to brownish yellow clay loam to gravelly loam, moderate subangular blocky structure, med. to strongly acid	Very pale brown blocky sandy clay loam, weak to moderate subangular blocky structure, medium acid	Yellow clay loam to clay, strong subangular to angular blocky structure, medium acid
Substratum	Very pale brown gravelly loam to sandy loam, weak subangular blocky structure to massive, strongly acid		Very pale brown loam, weak subangular blocky structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	40-60; gabbro rock	20-40; gabbro rock	40-60; gabbro rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate to moderately rapid
Soil Drainage	Well	Well	Well
Soil Manageability Class	2-3E	3Ep	2-3E
Group	III	III	III
Forest Site Class	4-5	4-5	4
Regeneration Potential	Low to moderate	Low	Low to moderate
Available Water Capacity (AWC)	Moderate	Low	High
Upper 20 inches	2.8 inches	1.4 inches	3.0 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	C	C	C
Unified Soil Class	0-50 ML	0-36 ML	0-7 ML
Depth Rating	50-60 SC		7-22 CH 22-60 ML
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	1	2	1
Included Areas	30 percent inclusions of soils similar to Skalan and Clallam families, deep, except on gabbro, and soils on slopes less than 20 percent and over 65 percent.		

**362 Holland family, deep-Clallam family, moderately deep-Cotati family,
deep association, gabbroic
20 to 65 percent slopes**

Map Unit Components	Holland family, deep, gabbroic (30%)	Clallam family, mod. deep, gabbroic (25%)	Cotati family, deep, gabbroic (15%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 40 to 65; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 20 to 40; all aspects; 1000 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Strong brown loam, moderate subangular blocky structure, strongly acid	Brownish yellow very gravelly loam, weak granular structure, medium acid	Very pale brown gravelly loam moderate granular structure, medium acid
Subsoil	Yellowish brown to brownish yellow clay loam to gravelly loam, moderate subangular blocky structure, med. to strongly acid	Very pale brown blocky sandy clay loam, weak to moderate subangular blocky structure, medium acid	Yellow clay loam to clay, strong subangular to angular blocky structure, medium acid
Substratum	Very pale brown gravelly loam to sandy loam, weak subangular blocky structure to massive, strongly acid		Very pale brown loam, weak subangular blocky structure, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60; gabbro rock	20-40; gabbro rock	40-60; gabbro rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate to moderately rapid
Soil Drainage	Well	Well	Well
Soil Manageability Class	2-3E	3Ep	2-3E
Group	III	III	III
Forest Site Class	4-5	4-5	4
Regeneration Potential	Low to moderate	Low	Low to moderate
Available Water Capacity (AWC)	Moderate	Low	High
Upper 20 inches	2.8 inches	1.4 inches	3.0 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	C	C	C
Unified Soil Class	0-50 ML	0-36 ML	0-7 ML
Depth Rating	50-60 SC		7-22 CH 22-60 ML
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	1	2	1
Included Areas	30 percent inclusions of soils similar to Skalan and Clallam families, deep, except on gabbro, and soils on slopes less than 20 percent and over 65 percent.		

**400 Rock outcrop-Rubble land association, ultramafic
30 to 90 percent slopes**

Map Unit Components	Rock outcrop, ultramafic	Rubble land
Approx. Proportion	(50%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes	Mountain sideslopes
Typical Vegetation	Barren	Barren

Soil Profile Description

Surface Layer	Colluvium of mixed rock sizes
Subsoil	
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material		
Erosion Factor (K)		
Max. Erosion Hazard		
Soil Permeability		
Soil Drainage		
Soil Manageability Class		
Group		
Forest Site Class		
Regeneration Potential		
Available Water Capacity (AWC)		
Upper 20 inches		
Susceptibility to Burning Damage		
Hydrologic Soil Group	D	B
Unified Soil Class		
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations		
Included Areas	20 percent inclusions of Oragran family, Lithic Haploxerafs, ultramafic, and frigid soils.	

401 Lithic Haploxeralfs, ultramafic-Ishi Pishi family, deep complex
35 to 70 percent slopes

Map Unit Components	Lithic Haploxeralfs, ultramafic	Ishi Pishi family, deep
Approx. Proportion	(35%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 35 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.
Typical Vegetation	Huckleberry Oak - Manzanita	Jeffrey Pine

Soil Profile Description

Surface Layer	Pale brown to reddish brown gravelly heavy loam,mod. granular to subangular blocky structure,slightly acid to neutral	Brown to reddish yellow gravelly clay loam to clay, strong granular structure, slightly acid to neutral
Subsoil	Yellowish brown to reddish brown gravelly clay loam, moderate subangular blocky structure, slightly acid to neutral	Yellowish red very gravelly clay, moderate subangular blocky structure, neutral
Substratum		White clay loam, weak subangular blocky structure, neutral

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	12-18; serpentinite rock	40-60; serpentintite rock
Erosion Factor (K)	.28-.37	.20-.32
Max. Erosion Hazard	Very high	Very high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	7	4-5
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low	Moderate
Upper 20 inches	<2.5 inches	3.1 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C-D	B
Unified Soil Class	0-15 ML	0-40 CH
Depth Rating		40-47 ML
Potential Failure as Road Subgrade	Possible	Yes
Seeding Recommendations	2	2
Included Areas	30 percent inclusions of Weitchpec family, mod. deep, and soils similar to Ishi Pishi family, deep, except mod. deep.	

402 Lithic Haploxeralfs, ultramafic-Ishi Pishi family, deep complex
35 to 70 percent slopes

Map Unit Components	Lithic Haploxeralfs, ultramafic	Ishi Pishi family, deep
Approx. Proportion	(35%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 35 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.
Typical Vegetation	Huckleberry Oak - Manzanita	Jeffrey Pine

Soil Profile Description

Surface Layer	Pale brown to reddish brown gravelly heavy loam,mod. granular to subangular blocky structure,slightly acid to neutral	Brown to reddish yellow gravelly clay loam to clay, strong granular structure, slightly acid to neutral
Subsoil	Yellowish brown to reddish brown gravelly clay loam, moderate subangular blocky structure, slightly acid to neutral	Yellowish red very gravelly clay, moderate subangular blocky structure, neutral
Substratum		White clay loam, weak subangular blocky structure, neutral

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	12-18; serpentinite rock	40-60; serpentinite rock
Erosion Factor (K)	.28-.37	.20-.32
Max. Erosion Hazard	Very high	Very high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	7	4-5
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low	Moderate
Upper 20 inches	<2.5 inches	3.1 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C-D	B
Unified Soil Class	0-15 ML	0-40 CH
Depth Rating		40-47 ML
Potential Failure as Road Subgrade	Possible	Yes
Seeding Recommendations	2	2
Included Areas	30 percent inclusions of Weitchpec family, mod. deep, and soils similar to Ishi Pishi family, deep, except mod. deep.	

**403 Oragran family-Weitchpec family, moderately deep-Lithic Haploxeralfs,
ultramafic complex
30 to 50 percent slopes**

Map Unit Components	Oragran family	Weitchpec family, mod. deep	Lithic Haploxeralfs, ultramafic
Approx. Proportion	(30%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 30 to 50; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 30 to 50 NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.
Typical Vegetation	Huckleberry Oak - Manzanita	Huckleberry Oak - Manzanita	Jeffrey Pine
Soil Profile Description			
Surface Layer	Very pale brown gravelly silt loam, strong granular structure, slightly acid	Pale brown gravelly silt loam, weak granular structure, medium acid	Pale brown to reddish brown gravelly heavy loam, moderate granular structure, sl. acid to neutral
Subsoil	Very pale brown gravelly silt loam, moderate granular structure, slightly acid	Light yellowish brown very gravelly sandy loam, moderate to weak granular structure, medium acid	Yellowish brown to reddish brown gravelly clay loam, moderate granular structure, slightly acid to neutral
Substratum	Very pale brown gravelly silt loam, weak granular structure, neutral		
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	10-20; serpentinite rock	20-40; serpentinite rock	12-18; serpentinite rock
Erosion Factor (K)	.28-.43	.24-.28	.28-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability Class Group	3ED III	3Ep III	3ED III
Forest Site Class	7	6	7
Regeneration Potential	Low	Low	Low
Available Water Capacity (AWC)	Very low	Low	Very low
Upper 20 inches	1.5 inches	1.4 inches	<2.5 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	C	C	C-D
Unified Soil Class Depth Rating	0-20 ML	0-8 ML 8-35 SC	0-15 ML
Potential Failure as Road Subgrade	No	No	Possible
Seeding Recommendations	2	2	2
Included Areas	30 percent inclusions of soils similar to Oragran family, except mod. deep and frigid serpentinitic soils.		

**404 Oragan family-Weitchpec family, moderately deep-Lithic Haploxeralfs,
ultramafic complex
50 to 70 percent slopes**

Map Unit Components	Oragan family	Weitchpec family, mod. deep	Lithic Haploxeralfs, ultramafic
Approx. Proportion	(30%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.
Typical Vegetation	Huckleberry Oak - Manzanita	Huckleberry Oak - Manzanita	Jeffrey Pine
Soil Profile Description			
Surface Layer	Very pale brown gravelly silt loam, strong granular structure, slightly acid	Pale brown gravelly silt loam, weak granular structure, medium acid	Pale brown to reddish brown gravelly heavy loam, moderate granular struc., slightly acid to neutral
Subsoil	Very pale brown gravelly silt loam, moderate granular structure, slightly acid	Light yellowish brown very gravelly sandy loam, moderate to weak granular structure, medium acid	Yellowish brown to reddish brown gravelly clay loam, mod.subang.bky. to gran.struct., slightly acid to neutral
Substratum	Very pale brown gravelly silt loam, weak granular structure, neutral		
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	10-20; serpentinite rock	20-40; serpentinite rock	12-18; serpentinite rock
Erosion Factor (K)	.28-.43	.24-.28	.28-.37
Max. Erosion Hazard	High	High	Very high
Soil Permeability	Moderate	Moderate	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability			
Class	3-4GE	3-4GE	3-4GE
Group	IV	IV	IV
Forest Site Class	7	6	7
Regeneration Potential	Low	Low	Low
Available Water Capacity (AWC)			
Upper 20 inches	1.5 inches	1.4 inches	<2.5 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	C-D	C	C-D
Unified Soil Class Depth Rating	0-20 ML	0-8 ML 8-35 SC	0-15 ML
Potential Failure as Road Subgrade	No	No	Possible
Seeding Recommendations	2	2	2
Included Areas	30 percent inclusions of soils similar to Oragan family, except mod. deep, and frigid serpentinitic soils.		

**405 Oragan family-Lithic Haploxeralfs, ultramafic-Rock outcrop, ultramafic complex
50 to 70 percent slopes**

Map Unit Components	Oragan family	Lithic Haploxeralfs, ultramafic	Rock outcrop, ultramafic
Approx. Proportion	(30%)	(20%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; 50 to 70; NW to SE, 400 to 3800 ft.; SE to W, 400 to 4500 ft.	Mountain sideslopes; SE to W 400 to 4500 ft.
Typical Vegetation	Huckleberry Oak - Manzanita	Jeffrey Pine	Barren

Soil Profile Description

Surface Layer	Very pale brown gravelly silt loam, strong granular structure, slightly acid	Pale brown to reddish brown gravelly heavy loam, moderate granular structure, slightly acid to neutral
Subsoil	Very pale brown gravelly silt loam, moderate granular structure, slightly acid	Yellowish brown to reddish brown grav. clay loam, moderate subangular blocky to mod. granular structure, slightly acid to neutral
Substratum	Very pale brown gravelly silt loam, weak granular structure, neutral	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	10-20; serpentinite rock	12-18; serpentinite rock	
Erosion Factor (K)	.28-.43	.28-.37	
Max. Erosion Hazard	High	Very high	
Soil Permeability	Moderate	Moderate	
Soil Drainage	Well	Well	
Soil Manageability Class	3-4GE	3-4GE	
Group	IV	IV	
Forest Site Class	7	7	
Regeneration Potential	Low	Low	
Available Water Capacity (AWC)	Very low	Very low	
Upper 20 inches	1.5 inches	<2.5 inches	
Susceptibility to Burning Damage	High	High	
Hydrologic Soil Group	C-D	C-D	D
Unified Soil Class	0-20 ML	0-15 ML	
Depth Rating			
Potential Failure as Road Subgrade	No	Possible	No
Seeding Recommendations	2	2	
Included Areas	35 percent inclusions of soils similar to Oragan family, except mod. deep, and frigid serpentinitic soils.		

**409 Althouse family, moderately deep-Skymor family, ultramafic association
35 to 75 percent slopes**

Map Unit Components	Althouse family, mod. deep	Skymor family, ultramafic
Approx. Proportion	(40%)	(25%)
Position, Slope, and Elevation	Mountain sideslopes and near ridges; 35 to 60; NW to E, 3800 to 6000 ft.; SE to W, 4500 to 6000 ft.	Mountain sideslopes and near ridges; NW to E, 3800 to 6000 ft.; SE to W, 4500 to 6000 ft.
Typical Vegetation	Jeffrey Pine	Huckleberry Oak - Manzanita

Soil Profile Description

Surface Layer	Light yellowish brown very gravelly loam, weak granular structure, medium acid	Grayish brown to brown gravelly loam, weak granular structure, medium acid
Subsoil	Very pale brown very gravelly loam, weak subangular blocky structure breaking to weak granular structure, slightly acid	Yellowish brown very gravelly loam, weak subangular blocky structure breaking to weak granular structure, slightly acid
Substratum		

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; metaigneous and ultramafic rock	10-20; metaigneous and ultramafic rock
Erosion Factor (K)	.20-.32	.20-.32
Max. Erosion Hazard	High	High
Soil Permeability	Moderate to rapid	Moderately rapid
Soil Drainage	Well	Well
Soil Manageability Class	3Ep	3Ed
Group	III	III
Forest Site Class	3-4	5
Regeneration Potential	Low	Very low
Available Water Capacity (AWC)	Low	Very low
Upper 20 inches	1.9 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	D
Unified Soil Class	0-46 ML	0-11 ML
Depth Rating		11-19 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	35 percent inclusions of Skalan family, deep, Rock outcrop, ultramafic and Holland family, mod. deep at lower elevations on southern aspects.	

**411 Hungry family, deep
35 to 70 percent slopes**

Map Unit Components	Hungry family, deep
Approx. Proportion	(40%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 4000 to 6000 ft.; SE to W, 4000 to 6000 ft.
Typical Vegetation	Jeffrey Pine

Soil Profile Description

Surface Layer	Light brown very gravelly clay loam, moderate granular structure, medium acid
Subsoil	Reddish yellow to pink cobbly clay loam, moderate subangular blocky structure, medium acid
Substratum	Very pale brown cobbly clay, weak subangular blocky structure, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; serpentinite rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate to moderately slow
Soil Drainage	Well
Soil Manageability Class	3-4GE
Group	IV
Forest Site Class	5
Regeneration Potential	Very low
Available Water Capacity (AWC)	Moderate
Upper 20 inches	2.5 inches
Susceptibility to Burning Damage	Moderate to high
Hydrologic Soil Group	C
Unified Soil Class	0-16 ML
Depth Rating	16-53 GC
Potential Failure as Road Subgrade	No
Seeding Recommendations	2
Included Areas	60 percent inclusions of Lithic Haploxerafs, ultramafic, soils similar to Hungry family, deep, except not skeletal, and soils similar to Voorhies family, mod. deep, except on serpentinite rock.

**412 Madden family, moderately deep
20 to 50 percent slopes**

Map Unit Components	Madden family, mod. deep
Approx. Proportion	(60%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 20 to 50; NW to E, 1000 to 4500 ft.; SE to W, 1000 to 4800 ft.
Typical Vegetation	Jeffrey Pine

Soil Profile Description

Surface Layer	Brown clay loam, moderate subangular blocky structure, neutral
Subsoil	Brown to yellowish brown clay loam to clay, moderate subangular blocky structure, neutral
Substratum	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; serpentinite rock
Erosion Factor (K)	.20-.32
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability	
Class	2-3E
Group	III
Forest Site Class	5
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Moderate
Upper 20 inches	3.6 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	C
Unified Soil Class	0-24 ML
Depth Rating	24-37 CH
Potential Failure as Road Subgrade	Possible
Seeding Recommendations	2
Included Areas	40 percent inclusions of Lithic Haploxeralfs, ultramafic, and soils similar to Madden family, mod. deep, except skeletal and deep.

**420 Gasquet-Walnett families, deep, stony-Jayel family, moderately deep association
10 to 50 percent slopes**

Map Unit Components	Gasquet family, deep, stony (30%)	Walnett family, deep, stony (25%)	Jayel family, mod. deep (20%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes; 10 to 40; all aspects; 500 to 3500 ft.	Mountain sideslopes; 15 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 15 to 40 all aspects; 500 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Yellowish red stony loam, moderate granular structure, medium acid	Strong brown stony loam, moderate subangular blocky structure, medium acid	Yellowish red clay loam, strong granular structure, neutral
Subsoil	Red to dark red stony clay loam, mod. subangular blocky structure breaking to mod. granular structure, medium to slightly acid	Strong brown to brownish yellow very gravelly clay loam, mod. to strong subangular blocky structure, slightly acid	Reddish yellow to yellowish red silty clay loam, moderate subangular blocky structure, neutral
Substratum		Yellow very gravelly loam, weak subangular blocky structure, slightly acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; serpentinized peridotite	40-60+; serpentinized peridotite	20-40; serpentinized peridotite
Erosion Factor (K)	.24-.43	.28-.43	.28-.49
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to slow	Moderate	Moderate to moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	2-3E	2-3Ep	2-3E
Group	II	II	II
Forest Site Class	5	6	6
Regeneration Potential	Moderate	Moderate	Moderate
Available Water Capacity (AWC)	High	Low to moderate	Low to moderate
Upper 20 inches	2.9 inches	2.1 inches	3.7 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	C	C	C
Unified Soil Class	0-60 ML	0-42 ML	0-40 ML
Depth Rating		42-60 GC	
Potential Failure as Road Subgrade	Yes	Yes	Yes
Seeding Recommendations	2	2	2
Included Areas	25 percent inclusions of Lithic Haploxeralfs, ultramafic, Oragran family, Holland family, deep, and soils similar to Walnett family, deep, except not skeletal.		

**425 Lithic Haploxeralfs, ultramafic-Walnett family, deep, stony association
25 to 70 percent slopes**

Map Unit Components	Lithic Haploxeralfs, ultramafic	Walnett family, deep
Approx. Proportion	(35%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes and benches; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 25 to 70; all aspects; 500 to 3500 ft.
Typical Vegetation	Perennial Grass	Huckleberry Oak - Manzanita

Soil Profile Description

Surface Layer	Pale brown gravelly loam, moderate subangular blocky structure, neutral	Strong brown stony loam, moderate subangular blocky structure, medium acid
Subsoil	Yellowish brown gravelly loam to clay loam, moderate subangular blocky structure, neutral	Strong brown to brownish yellow very gravelly clay loam, moderate to strong subangular blocky structure, slightly acid
Substratum		Yellow very gravelly clay loam, weak subangular blocky structure, slightly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	12-18; serpentinite rock	40-60; serpentinitized peridotite
Erosion Factor (K)	.28-.37	.28-.43
Max. Erosion Hazard	High	High
Soil Permeability	Moderate to moderately slow	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	7	6
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low	Low to moderate
Upper 20 inches	<2.5 inches	2.1 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C-D	C-D
Unified Soil Class	0-15 ML	0-42 ML
Depth Rating		42-60 GC
Potential Failure as Road Subgrade	Possible	Yes
Seeding Recommendations	2	2
Included Areas	45 percent inclusions of soils similar to Walnett family, deep, except not skeletal, Lithic Haploxeralfs, ultramafic, Jayel family, mod. deep, soils similar to Oragran family, except mod. deep, and so	

**430 Jayel family, moderately deep-Walnett family, deep-Lithic Xerochrepts,
ultramafic association, stony
35 to 75 percent slopes**

Map Unit Components	Jayel family, mod. deep, stony (35%)	Walnett family, deep, stony (20%)	Lithic Xerochrepts, ultramafic (20%)
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes and broad ridges; 35 to 60; all aspects; 1000 to 3500 ft.	Mountain sideslopes; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 35 to 75 all aspects; 500 to 3500 ft.
Typical Vegetation	Knobcone Pine	Huckleberry Oak - Manzanita	Huckleberry Oak - Manzanita

Soil Profile Description

Surface Layer	Reddish brown stony clay loam, moderate granular structure, neutral	Strong brown stony loam, moderate subangular blocky structure, medium acid	Strong brown stony clay loam moderate granular structure, neutral
Subsoil	Yellowish red cobbly clay, weak subangular blocky structure, neutral	Strong brown to brownish yellow very gravelly clay loam, moderate to strong subangular blocky structure, slightly acid	Yellowish red clay loam, moderate subangular blocky structure, neutral
Substratum		Yellow very gravelly clay loam, weak subangular blocky structure, slightly acid	

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; serpentinized peridotite rock	40-60; serpentinized peridotite rock	12-20; serpentinized peridotite rock
Erosion Factor (K)	.24-.29	.28-.43	.28-.43
Max. Erosion Hazard	High	High	Very high
Soil Permeability	Moderate to moderately slow	Moderate	Moderate to moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3E	3-4GE	3-4GE
Group	III	III	III
Forest Site Class	6	6	7
Regeneration Potential	Low	Low to moderate	Low
Available Water Capacity (AWC)	Low to moderate	Low	Very low
Upper 20 inches	2.8 inches	2.1 inches	<2.5 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	C-D	C-D	D
Unified Soil Class	0-31 ML	0-42 ML	0-14 ML
Depth Rating		42-60 GC	
Potential Failure as Road Subgrade	No	Yes	Yes
Seeding Recommendations	2	2	2
Included Areas	25 percent inclusions of Rock outcrop,ultramafic, Oragran family, Gasquet family, deep, stony, Lit Haploxeralfs, ultramafic, and soils similar to Walnett family, deep, except not skeletal.		

**431 Jayel family, moderately deep, stony-Walnett family, deep, stony-Oragran family complex
5 to 35 percent slopes**

Map Unit Components	Jayel family, mod. deep, stony (30%)	Walnett family, deep, stony (25%)	Oragran family (20%)
Approx. Proportion			
Position, Slope, and Elevation	Broad ridges and mountain sideslopes; 5 to 35; all aspects; 1000 to 3500 ft.	Broad ridges and mountain sideslopes; 5 to 35; all aspects; 1000 to 3500 ft.	Broad ridges and mountain sideslopes; 5 to 35; all aspects; 1000 to 3500 ft.
Typical Vegetation	Knobcone Pine	Knobcone Pine	Huckleberry Oak - Manzanita
Soil Profile Description			
Surface Layer	Reddish brown stony clay loam, moderate granular structure, neutral	Strong brown stony loam, moderate subangular blocky structure, medium acid	Very pale brown gravelly silt loam, strong granular structure, slightly acid
Subsoil	Yellowish red cobbly clay, weak subangular blocky structure, neutral	Strong brown very gravelly clay loam, strong subangular blocky structure, slightly acid	Very pale brown gravelly silt loam, moderate granular structure, slightly acid
Substratum		Yellow very gravelly loam, weak subangular blocky structure, slightly acid	Very pale brown gravelly silt loam, weak granular structure, neutral
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material	20-40; serpentinized peridotite rock	40-60; serpentinized peridotite rock	12-20; serpentinized peridotite rock
Erosion Factor (K)	.24-.29	.28-.43	.28-.43
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability			
Class	2E	2E	2Ed
Group	II	II	II
Forest Site Class	6	6	7
Regeneration Potential	Low	Low to moderate	Low
Available Water Capacity (AWC)			
Upper 20 inches	2.8 inches	2.1 inches	1.5 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	C	C-D	C-D
Unified Soil Class	0-31 ML	0-42 ML	0-20 ML
Depth Rating		42-60 GC	
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	2	2	2
Included Areas	25 percent inclusions of Weitchpec family, mod. deep, Lithic Xerochrepts, ultramafic, Gasquet family, deep, stony, and Rock outcrop, ultramafic.		

500 Rock outcrop, dioritic

Map Unit Components

Approx. Proportion

Position, Slope, and
Elevation

Typical Vegetation

Rock outcrop, dioritic

(70%)

Mountain peaks, ridges and sideslopes

Barren

Soil Profile Description

Surface Layer

Subsoil

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

Erosion Factor (K)

Max. Erosion Hazard

Soil Permeability

Soil Drainage

Soil Manageability

Class

Group

Forest Site Class

Regeneration Potential

Available Water

Capacity (AWC)

Upper 20 inches

Susceptibility to

Burning Damage

Hydrologic Soil Group

D

Unified Soil Class

Depth Rating

Potential Failure as

Road Subgrade

No

Seeding

Recommendations

Included Areas

30 percent inclusions of Maymen family, dioritic and soils similar to Raisio family, mod. deep, except less than 20 inches deep.

**501 Rock outcrop, dioritic-Maymen family, complex, dioritic
50 to 90 percent slopes**

Map Unit Components
Approx. Proportion
Position, Slope, and
Elevation
Typical Vegetation

Rock outcrop, dioritic

(40%)

Mountain sideslopes and ridges; NW to E; 600
to 4500 ft.

Barren

Maymen family

(30%)

Mountain sideslopes in pockets between rock
outcrop; 50 to 90; SE to W; 600 to 4800 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Light brownish gray gravelly sandy loam, weak
granular structure, strongly acid

Subsoil

Light yellowish brown gravelly coarse sandy
loam, weak subangular blocky structure, slightly
acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

Diorite rock

12-20; diorite rock

Erosion Factor (K)

.24-.37

Max. Erosion Hazard

High

Soil Permeability

Rapid

Soil Drainage

Somewhat excessively

Soil Manageability
Class
Group

4GE

IV

Forest Site Class

5

Regeneration Potential

Low

Available Water
Capacity (AWC)

Very low

Upper 20 inches

1.2 inches

Susceptibility to
Burning Damage

High

Hydrologic Soil Group

D

C

Unified Soil Class
Depth Rating

0-16 SC

Potential Failure as
Road Subgrade

No

No

Seeding
Recommendations

2

Included Areas

30 percent inclusions of Hugo family, mod. deep, and soils similar to Raisio family, except less than
20 inches deep.

**503 Rock outcrop, dioritic-Wapal family, moderately deep association
45 to 75 percent slopes**

Map Unit Components	Rock outcrop, dioritic	Wapal family, mod. deep
Approx. Proportion	(45%)	(40%)
Position, Slope, and Elevation	Ridges and mountain sideslopes; NW to E; 4500 to 6000 ft.	Broad ridges, drainages, and mountain sideslop 45 to 75; SE to W; 4800 to 6000 ft.
Typical Vegetation	Barren	White Fir

Soil Profile Description

Surface Layer	Dark yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid
Subsoil	
Substratum	Yellowish brown cobbly loamy sand, single grain, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	Diorite rock	20-40; diorite rock
Erosion Factor (K)		.17-.37
Max. Erosion Hazard		Very high
Soil Permeability		Moderately rapid
Soil Drainage		Somewhat excessively
Soil Manageability Class		3-4GE
Group		IV
Forest Site Class		4-5
Regeneration Potential		Low
Available Water Capacity (AWC)		Very low
Upper 20 inches		0.7 inches
Susceptibility to Burning Damage		High
Hydrologic Soil Group	D	B
Unified Soil Class		0-5 SC
Depth Rating		5-35 GW
Potential Failure as Road Subgrade	No	No
Seeding Recommendations		3
Included Areas	15 percent inclusions of soils similar to Raisio family, mod. deep, except less than 20 inches deep and frigid, and colluvial material.	

**515 Chaix family, moderately deep
50 to 70 percent slopes**

Map Unit Components	Chaix family, mod. deep
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; NW to E, 2000 to 4000 ft.; SE to W, 2000 to 4500 ft.
Typical Vegetation	Mixed Conifer-Fir

Soil Profile Description

Surface Layer	Yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid
Subsoil	Yellowish brown gravelly sandy loam, single grain, strongly acid
Substratum	saprolite (weathered diorite rock)

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; diorite rock
Erosion Factor (K)	.20-.37
Max. Erosion Hazard	Very high
Soil Permeability	Moderately rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability	
Class	3-4GE
Group	IV
Forest Site Class	4
Regeneration Potential	Low to moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	B
Unified Soil Class	0-19 SC
Depth Rating	19-51 SM
Potential Failure as Road Subgrade	Possible
Seeding Recommendations	2
Included Areas	20 percent inclusions of Rock outcrop, dioritic, Rubble land, Maymen family, dioritic, and soils similar to Chaix family, mod. deep, except frigid.

**517 Chaix family, moderately deep-Rock outcrop, dioritic complex
70 to 90 percent slopes**

Map Unit Components	Chaix family, mod. deep	Rock outcrop, dioritic
Approx. Proportion	(55%)	(25%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; NW to SE, 2000 to 4000; SE to W, 2000 to 4500 ft.	Mountain sideslopes; all aspects; 2000 to 4500 f
Typical Vegetation	Huckleberry Oak - Manzanita	Barren

Soil Profile Description

Surface Layer	Yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid
Subsoil	Yellowish brown gravelly sandy loam, single grain, strongly acid
Substratum	Weathered diorite rock

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; diorite	
Erosion Factor (K)	.20-.37	
Max. Erosion Hazard	Very high	
Soil Permeability	Moderately rapid	
Soil Drainage	Well to somewhat excessively	
Soil Manageability		
Class	4GE	
Group	IV	
Forest Site Class	5-6	
Regeneration Potential	Low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	High	
Hydrologic Soil Group	B	D
Unified Soil Class	0-19 SC	
Depth Rating	19-40 SM	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	
Included Areas	20 percent inclusions of Rubble land, Maymen family, dioritic, and soils similar to Chaix family, mod. deep, except frigid.	

**520 Chaix family, moderately deep
30 to 50 percent slopes**

Map Unit Components	Chaix family, mod. deep
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Yellowish brown to brown gravelly coarse sandy loam, weak granular structure, strongly acid
Subsoil	Yellowish brown gravelly coarse sandy loam, single grain, very strongly acid
Substratum	Weathered diorite rock

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; diorite
Erosion Factor (K)	.20-.37
Max. Erosion Hazard	Very high
Soil Permeability	Moderately rapid to rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability	
Class	3Ep
Group	III
Forest Site Class	4
Regeneration Potential	Low
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	B
Unified Soil Class	0-19 SC
Depth Rating	19-40 SM
Potential Failure as Road Subgrade	No
Seeding Recommendations	2
Included Areas	20 percent inclusions of Maymen family, dioritic, Holland family, deep, dioritic, Deadman family, deep, and soils on slopes under 30 percent and over 50 percent.

**522 Chaix family, moderately deep-Holland family, deep, dioritic association
25 to 65 percent slopes**

Map Unit Components	Chaix family, mod. deep	Holland family, deep, dioritic
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes and benches; 25 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Yellowish brown to brown gravelly coarse sandy loam, weak granular structure, strongly acid	Brown loam, strong granular structure, slightly acid
Subsoil	Yellowish brown gravelly coarse sandy loam, single grain, very strongly acid	Brown to reddish yellow sandy clay loam, moderate subangular blocky structure, medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; diorite rock	40-60+; diorite rock
Erosion Factor (K)	.20-.37	.24-.32
Max. Erosion Hazard	Very high	High
Soil Permeability	Moderately rapid to rapid	Moderately slow
Soil Drainage	Well to somewhat excessively	Well
Soil Manageability Class	3Ep	3E
Group	III	III
Forest Site Class	4	3
Regeneration Potential	Low	High
Available Water Capacity (AWC)	Low	High to very high
Upper 20 inches	1.7 inches	3.3 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	B	C
Unified Soil Class	0-19 SC	0-10 ML
Depth Rating	19-40 SM	10-60 SC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	20 percent inclusions of Deadman family, deep, Maymen family, dioritic, frigid soils, and soils on slopes less than 25 percent.	

**524 Deadman-Rogue families association, deep
20 to 70 percent slopes**

Map Unit Components		Deadman family, deep	Rogue family, deep
Approx. Proportion		(40%)	(40%)
Position, Slope, and Elevation		Mountain sideslopes and ridges; 20 to 50; NW to E, 4500 to 6000 ft.; SE to W, 4800 to 6000 ft.	Mountain sideslopes and ridges; 30 to 70; NW to E, 4500 to 6000 ft.; SE to W, 4800 to 6000 ft.
Typical Vegetation		White Fir	Mixed Conifer-Fir
Soil Profile Description			
Surface Layer		Very dark gray loam, weak granular to weak subangular blocky structure, strongly acid	Dark grayish brown sandy loam, weak granular structure, slightly acid
Subsoil		Brown gravelly loam, weak subangular blocky structure breaking to weak granular structure, strongly acid	Pale brown to pale yellow sandy loam, weak granular structure, slightly to medium acid
Substratum		Weathered diorite	Pale yellow loamy sand, weak granular structure, medium acid
Soil Properties & Management Interpretations			
Rooting Depth (in.), Underlying Material		40-60+; diorite rock	40-60+; diorite rock
Erosion Factor (K)		.20-.32	.20-.32
Max. Erosion Hazard		Very high	High
Soil Permeability		Moderately rapid	Moderate to moderately rapid
Soil Drainage		Well to somewhat excessively	Well to somewhat excessively
Soil Manageability Class		2-3E	3-4GE
Group		III	III
Forest Site Class		2-3	4
Regeneration Potential		Moderate	Low to moderate
Available Water Capacity (AWC)		High	Moderate
Upper 20 inches		3.2 inches	1.9 inches
Susceptibility to Burning Damage		Moderate	High
Hydrologic Soil Group		B	B
Unified Soil Class		0-53 OL	0-41 SC
Depth Rating		53-70 SW	41-57 SW
Potential Failure as Road Subgrade		Yes	No
Seeding Recommendations		3	2
Included Areas		20 percent inclusions of Nanny family, deep, dioritic, Maymen family, dioritic, Chaix family, deep, soils similar to Deadman family, deep, except less than 20 inches deep, and soils similar to Rogue f	

**525 Nanny family, deep, dioritic-Althouse family, deep, stony association
30 to 70 percent slopes**

Map Unit Components	Nanny family, deep, dioritic	Althouse family, deep, stony
Approx. Proportion	(40%)	(30%)
Position, Slope, and Elevation	Colluvial mountain sideslopes and glacial moraines; 30 to 70; NW to E, 3800 to 6000 ft.;SE to W, 4500 to 6000 ft.	Colluvial mountain sideslopes and glacial moraines; 30 to 70; NW to E, 3800 to 6000 ft.; SE to W, 4500 to 6000 ft.
Typical Vegetation	White Fir - Red Fir	White Fir - Red Fir
Soil Profile Description		
Surface Layer	Yellowish brown gravelly loam, weak granular structure, strongly acid	Yellowish brown gravelly loam, strong granula structure, medium acid
Subsoil	Yellowish brown gravelly to very cobbly loam, weak granular structure, medium to strongly acid	Yellowish brown gravelly to very gravelly loam weak subangular blocky structure breaking to mod. granular structure, slightly to medium aci
Substratum		Light yellowish brown stony loam, weak subangular blocky structure, slightly acid
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	40-60+; igneous, metaigneous, and glacial till	40-60+; igneous, metaigneous, and glacial till
Erosion Factor (K)	.20-.32	.20-.32
Max. Erosion Hazard	High	High
Soil Permeability	Moderately rapid	Moderately rapid
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	III	III
Forest Site Class	3-4	4-5
Regeneration Potential	Low to moderate	Low to moderate
Available Water Capacity (AWC)	Low	Moderate
Upper 20 inches	1.5 inches	2.2 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C	B
Unified Soil Class	0-55 SC	0-35 ML
Depth Rating		35-59 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	2
Included Areas	30 percent inclusions of Deadmand and Rogue families, deep, Rock outcrop,dioritic, soils similar t Nanny family, deep, dioritic and Althouse family, deep, stony, except mod. deep, and soils on slop under 30 percent.	

**530 Maymen family, dioritic
45 to 70 percent slopes**

Map Unit Components
Approx. Proportion
Position, Slope, and
Elevation
Typical Vegetation

Maymen family, dioritic

(85%)

Mountain sideslopes; 45 to 70; NW to E, 600 to
4500 ft.; SE to W, 600 to 4800 ft.

Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer

Light brownish gray gravelly coarse sandy
loam, weak granular structure, strongly acid

Subsoil

Light yellowish brown gravelly coarse sandy
loam, single grain, slightly acid

Substratum

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

12-20; diorite rock

Erosion Factor (K)

.20-.28

Max. Erosion Hazard

High

Soil Permeability

Rapid

Soil Drainage

Somewhat excessively

Soil Manageability

Class

3-4Gd

Group

IV

Forest Site Class

5-6

Regeneration Potential

Low

Available Water
Capacity (AWC)

Very low

Upper 20 inches

1.9 inches

Susceptibility to
Burning Damage

High

Hydrologic Soil Group

C

Unified Soil Class

0-16 SC

Depth Rating

Potential Failure as
Road Subgrade

No

Seeding

2

Recommendations

Included Areas

15 percent inclusions of Chaix family, deep and, Rock outcrop.

**535 Deadman family, moderately deep
0 to 30 percent slopes**

Map Unit Components	Deadman family, mod. deep
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes and broad ridges; 0 to 30; all aspects; 4500 to 6500 ft.
Typical Vegetation	Red Fir - Noble Fir

Soil Profile Description

Surface Layer	Dark brown gravelly coarse sandy loam, massive, very strongly acid
Subsoil	Dark yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid
Substratum	Dark yellowish brown gravelly coarse sandy loam, massive, strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	20-40; diorite rock
Erosion Factor (K)	.20-.37
Max. Erosion Hazard	High
Soil Permeability	Moderately rapid
Soil Drainage	Somewhat excessively
Soil Manageability	
Class	2E
Group	II
Forest Site Class	3
Regeneration Potential	Low
Available Water Capacity (AWC)	Low
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	B-C
Unified Soil Class	0-24 OL
Depth Rating	24-32 SC
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	2
Included Areas	20 percent inclusions of Chaix family, deep, Maymen family, dioritic, Rock outcrop, diorite, and Rubble land.

**540 Chaix family, moderately deep-Holland family, deep, dioritic association
25 to 65 percent slopes**

Map Unit Components	Chaix family, mod. deep	Holland family, deep, dioritic
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes and benches; 25 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Yellowish brown to brown gravelly coarse sandy loam, weak granular structure, strongly acid	Brown loam, strong granular structure, slightly acid
Subsoil	Yellowish brown gravelly coarse sandy loam, single grain, very strongly acid	Brown to reddish yellow sandy clay loam, moderate subangular blocky structure, medium acid
Substratum		
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; diorite rock	40-60+; diorite rock
Erosion Factor (K)	.20-.37	.24-.32
Max. Erosion Hazard	Very high	High
Soil Permeability	Moderately rapid to rapid	Moderately slow
Soil Drainage	Well to somewhat excessively	Well
Soil Manageability		
Class	3Ep	3E
Group	III	III
Forest Site Class	4	3
Regeneration Potential	Low	High
Available Water Capacity (AWC)		
Upper 20 inches	1.7 inches	3.3 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	B	C
Unified Soil Class	0-19 SC	0-10 ML
Depth Rating	19-40 SM	10-60 SC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	20 percent inclusions of Deadman family, deep, Maymen family, dioritic, frigid soils, and soils on slopes less than 25 percent.	

**550 Wapal family, moderately deep
35 to 65 percent slopes**

Map Unit Components
Approx. Proportion
Position, Slope, and
Elevation
Typical Vegetation

Wapal family, mod. deep

(80%)

Mountain sideslopes; 35 to 65; NW to E, 4500
to 6000 ft.; SE to W, 4800 to 6000 ft.

White Fir

Soil Profile Description

Surface Layer

Dark yellowish brown gravelly coarse sandy
loam, weak granular structure, strongly acid

Subsoil

Substratum

Yellowish brown cobblely loamy sand, single
grain, medium acid

Soil Properties & Management Interpretations

Rooting Depth (in.),
Underlying Material

20-40; diorite rock

Erosion Factor (K)

.24-.32

Max. Erosion Hazard

Very high

Soil Permeability

Moderately rapid to rapid

Soil Drainage

Somewhat excessively

Soil Manageability

Class

3EP

Group

III

Forest Site Class

4-5

Regeneration Potential

Low

Available Water
Capacity (AWC)

Very low

Upper 20 inches

0.7 inches

Susceptibility to
Burning Damage

High

Hydrologic Soil Group

B

Unified Soil Class

0-5 SC

Depth Rating

5-35 GW

Potential Failure as
Road Subgrade

No

Seeding

3

Recommendations

Included Areas

20 percent inclusions of Rock outcrop, diorite, and soils similar to Wapal family, mod. deep, except
less than 20 inches deep.

**552 Wapal family, moderately deep-Deadman family, deep complex
35 to 65 percent slopes**

Map Unit Components

Approx. Proportion

**Position, Slope, and
Elevation**

Typical Vegetation

Wapal family, mod. deep

(50%)

Mountain sideslopes; 35 to 65; NW to E, 4500 to 6000 ft.; SE to W, 4800 to 6000 ft.

White Fir

Deadman family, deep

(30%)

Mountain sideslopes and drainages; 35 to 65; NW to E, 4500 to 6000 ft.; SE to W, 4800 to 6000 ft.

White Fir

Soil Profile Description

Surface Layer

Dark yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid

Very dark gray loam, weak subangular blocky structure, strongly acid

Subsoil

Brown gravelly loam, weak subangular blocky structure breaking to weak granular structure, strongly acid

Substratum

Yellowish brown cobblely loamy sand, single grain, medium acid

Weathered diorite

Soil Properties & Management Interpretations

**Rooting Depth (in.),
Underlying Material**

20-40; diorite rock

40-60; diorite rock

Erosion Factor (K)

.20-.32

.20-.32

Max. Erosion Hazard

Very high

Very high

Soil Permeability

Moderately rapid to rapid

Moderately rapid

Soil Drainage

Somewhat excessively

Somewhat excessively

Soil Manageability

Class

3EP

3E

Group

III

III

Forest Site Class

4-5

2-3

Regeneration Potential

Low

Low to moderate

**Available Water
Capacity (AWC)**

Very low

Moderate to high

Upper 20 inches

0.7 inches

3.2 inches

**Susceptibility to
Burning Damage**

High

Moderate

Hydrologic Soil Group

B

B

Unified Soil Class

0-5 SC

0-53 OL

Depth Rating

5-35 GW

53-60 SW

**Potential Failure as
Road Subgrade**

No

Yes

**Seeding
Recommendations**

3

3

Included Areas

20 percent inclusions of soils similar to Wapal family, mod. deep, except less than 20 inches deep and meadowlands.

**554 Wapal family, moderately deep-Hugo family, deep, dioritic association
20 to 65 percent slopes**

Map Unit Components	Wapal family, mod. deep	Hugo family, deep, dioritic
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Mountain sideslopes, ridges, and drainages; 40 to 65; NW to E, 4500 to 6000 ft.; SE to W, 4800 to 6000 ft.	Mountain sideslopes and benches; 20-45; NW to E, 600 to 4500 ft.; SE to W 600 to 4800 ft.
Typical Vegetation	White Fir	Douglas-fir - Tanoak - Madrone
Soil Profile Description		
Surface Layer	Dark yellowish brown gravelly coarse sandy loam, weak granular structure, strongly acid	Reddish brown gravelly loam, strong subangular blocky structure, medium acid
Subsoil		Reddish brown to brown gravelly loam, moderate subangular blocky structure to massive, medium acid
Substratum	Yellowish brown cobbley loamy sand, single grain, medium acid	Brownish yellow sandy loam, massive, strongly acid
Soil Properties & Management Interpretations		
Rooting Depth (in.), Underlying Material	20-40; diorite rock	40-60; diorite rock
Erosion Factor (K)	.20-.32	.20-.28
Max. Erosion Hazard	Very high	High
Soil Permeability	Moderately rapid to rapid	Moderate
Soil Drainage	Somewhat excessively	Well
Soil Manageability Class	3EP	3E
Group	III	III
Forest Site Class	4-5	3
Regeneration Potential	Low	Moderate
Available Water Capacity (AWC)	Very low	Moderate
Upper 20 inches	0.7 inches	2.9 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	B	B
Unified Soil Class	0-5 SC	0-39 ML
Depth Rating	5-35 GW	39-51 SC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	3	1
Included Areas	20 percent inclusions of soils similar to Wapal family, mod. deep, except less than 20 inches deep, and Holland family, deep, dioritic.	

**560 Hugo family, deep, dioritic
15 to 35 percent slopes**

Map Unit Components	Hugo family, deep, dioritic
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes and benches; 15 to 35; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

Soil Profile Description

Surface Layer	Reddish brown gravelly loam, strong subangular blocky structure, medium acid
Subsoil	Reddish brown to brown gravelly loam, moderate subangular blocky structure to massive, medium acid
Substratum	Brownish yellow sandy loam, massive, strongly acid

Soil Properties & Management Interpretations

Rooting Depth (in.), Underlying Material	40-60+; diorite rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	2E
Group	II
Forest Site Class	3
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Moderate
Upper 20 inches	2.9 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	B
Unified Soil Class	0-39 ML
Depth Rating	39-51 SC
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	20 percent inclusions of Holland family, deep, dioritic and Raisio family, mod. deep.

Taxonomic Units

In this section, each soil recognized in the survey area is described. The descriptions are arranged in alphabetical order.

The technical descriptions of families and phases given in the following pages use the nomenclature and standards of the Soil Survey Manual (Soil Survey Staff, 1951).

Colors are for dry soil unless otherwise stated. Dry phases were not described separately since they are similar, except for aspect.

Table 6 presents a list of the soil families, phases, and their classifications. The map units in which they are found as a major component are shown in Table 7.

TABLE 6. Classification of Taxonomic Units

SOIL NAME	FAMILY OR HIGHER TAXONOMIC CLASS
Aiken family, deep	Xeric Haplohumults, clayey, oxidic, mesic
*Albus family, deep	Ultic Haploxeralfs, loamy-skeletal, micaceous, frigid
Althouse family, deep, stony	Dystric Xerochrepts, loamy-skeletal, mixed, frigid
Althouse family, moderately deep	Dystric Xerochrepts, loamy-skeletal, mixed, frigid
Bins family, deep	Typic Xerumbrepts, fine-loamy, mixed, frigid
Chaix family, moderately deep	Dystric Xerochrepts, coarse-loamy, mixed, mesic
Chenango family, deep	Typic Dystrichrepts, loamy-skeletal, mixed, mesic
Clallam family, deep	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Clallam family, deep, dry	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Clallam family, deep, extremely gravelly	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Clallam family, moderately deep	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Clallam family, moderately deep, gabbroic	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Clallam family, moderately deep, unstable	Dystric Xerochrepts, loamy-skeletal, mixed, mesic
Cotati, family, deep, gabbroic	Ultic Palloxeralfs, fine, mixed, mesic
Coyata family, deep	Typic Xerumbrepts, loamy-skeletal, mixed, mesic
Coyata family, deep, dry	Typic Xerumbrepts, loamy-skeletal, mixed, mesic
*Deadman family, deep	Pachic Xerumbrepts, coarse-loamy, mixed, frigid
*Deadman family, moderately deep	Pachic Xerumbrepts, coarse-loamy, mixed, frigid
Deadwood family	Dystric Lithic Xerochrepts, loamy-skeletal, mixed, mesic
Doty family, deep	Pachic Xerumbrepts, fine-loamy, mixed, mesic
Elioak family, deep	Typic Hapludults, clayey, kaolinitic, mesic
*Gasquet family, deep, stony	Typic Haploxerults, clayey, oxidic, mesic
Goldridge, family, deep	Typic Haploxerults, fine-loamy, mixed, mesic
**Haploxerults	Haploxerults
Hartleton family, deep	Typic Hapludults, loamy-skeletal, mixed, mesic
Hecker family, deep	Mollic Haploxeralfs, loamy-skeletal, mixed, mesic
Holland family, deep	Ultic Haploxeralfs, fine-loamy, mixed, mesic
Holland family, deep, dioritic	Ultic Haploxeralfs, fine-loamy, mixed, mesic
Holland family, deep, dry	Ultic Haploxeralfs, fine-loamy, mixed, mesic
Holland family, deep, gabbroic	Ultic Haploxeralfs, fine-loamy, mixed, mesic
Holland family, deep, stony	Ultic Haploxeralfs, fine-loamy, mixed, mesic
Holyoke family	Lithic Dystrichrepts, loamy, mixed, mesic
Horseshoe family, deep	Xeric Haplohumults, fine-loamy, mixed, mesic
Hugo family, deep	Dystric Xerochrepts, fine-loamy, mixed, mesic
Hugo family, deep, dioritic	Dystric Xerochrepts, fine-loamy, mixed, mesic
Hugo family, deep, dry	Dystric Xerochrepts, fine-loamy, mixed, mesic
Hugo family, moderately deep	Dystric Xerochrepts, fine-loamy, mixed, mesic
Hullt family, deep	Typic Xerumbrepts, fine-loamy, mixed, mesic

TABLE 6. Classification of Taxonomic Units (continued)

SOIL NAME	FAMILY OR HIGHER TAXONOMIC CLASS
Hult family, deep, dry	Typic Xerumbrepts, fine-loamy, mixed, mesic
*Hungry family, deep	Typic Xerochrepts, loamy-skeletal, serpentinitic, frigid
*Ishi Pishi family, deep	Ultic Haploxeralfs, clayey-skeletal, serpentinitic, mesic
*Jayel family, moderately deep	Dystric Xerochrepts, fine, oxidic, mesic
*Jayel family, moderately deep, stony	Dystric Xerochrepts, fine, oxidic, mesic
*Kistirn family, deep	Typic Haploxerults, loamy-skeletal, mixed, mesic
**Lithic Haploxeralfs, ultramafic	Lithic Haploxeralfs, ultramafic
**Lithic Xerochrepts, ultramafic	Lithic Xerochrepts, ultramafic
**Lithic Xerorthents	Lithic Xerorthents
*Madden family, moderately deep	Mollic Haploxeralfs, fine, serpentinitic, mesic
Maymen family	Dystric Lithic Xerochrepts, loamy, mixed, mesic
Maymen family, dioritic	Dystric Lithic Xerochrepts, loamy, mixed, mesic
Melbourne family, deep	Ultic Haploxeralfs, fine, mixed, mesic
Nanny family, deep	Typic Xerumbrepts, loamy-skeletal, mixed, frigid
Nanny family, deep, dioritic	Typic Xerumbrepts, loamy-skeletal, mixed, frigid
Nanny family, moderately deep	Typic Xerumbrepts, loamy-skeletal, mixed, frigid
*Oragran family	Lithic Xerochrepts, loamy, serpentinitic, mesic
Oxalis family, deep	Vertic Xerochrepts, fine, montmorillonitic, thermic
*Race family, deep	Dystric Xerochrepts, fine-loamy, micaceous, frigid
***Raisio family, moderately deep	Typic Xerorthents, loamy-skeletal, mixed, non-acid, mesic
Rogue family, deep	Dystric Xerochrepts, coarse-loamy, mixed, frigid
Skalan family, deep	Ultic Haploxeralfs, loamy-skeletal, mixed, mesic
Skalan family, moderately deep	Ultic Haploxeralfs, loamy-skeletal, mixed, mesic
Skinner family, deep	Typic Dystrichrepts, fine-loamy, mixed, mesic
Skymor family	Dystric Lithic Xerochrepts, loamy-skeletal, mixed, frigid
Skymor family, ultramafic	Dystric Lithic Xerochrepts, loamy-skeletal, mixed, frigid
*Soulajule family, deep	Ultic Haploxeralfs, clayey-skeletal, mixed, mesic
**Typic Xerofluvents	Typic Xerofluvents
Voorhies family, moderately deep	Typic Haploxeralfs, loamy-skeletal, mixed, mesic
*Walnett family, deep, stony	Ultic Haploxeralfs, loamy-skeletal, oxidic, mesic
Wapal family, moderately deep	Typic Xerorthents, sandy-skeletal, mixed, frigid
Weitchpec family, moderately deep	Typic Xerochrepts, loamy-skeletal, serpentinitic, mesic
Woodsey family	Lithic Xerumbrepts, loamy-skeletal, mixed, frigid
**Xerochrepts	Xerochrepts

* Proposed series

** Not classified to family level due to extreme variability.

*** This soil is a taxajunct. Raisio series is classified Entic Ultic Haploxerolls, loamy-skeletal, mixed, mesic.

TABLE 7. Soil Components in Map Units

COMPONENT NAME	MAP UNIT(S)
Aiken family, deep	225, 227, 316, 346, 348, 349
Aibus family, deep	258
Althouse family, deep, stony	335, 525
Althouse family, moderately deep	409
Bins family, deep	257, 259
Chaix family, moderately deep	515, 517, 520, 522
Chenango family, deep	209, 241, 244
Clallam family, deep	210, 220, 266, 336
Clallam family, deep, dry	221, 265
Clallam family, deep, extremely gravelly	280, 281, 345
Clallam family, moderately deep	211, 212, 214, 240, 245, 246, 331, 340, 346, 356
Clallam family, moderately deep, gabbroic	361
Clallam family, moderately deep, unstable	215, 237, 242
Cotati, family, deep, gabbroic	361
Coyata family, deep	220
Coyata family, deep, dry	221
Deadman family, deep	524, 552
Deadman family, moderately deep	535
Deadwood family	226, 254, 280, 281, 282
Doty family, deep	236, 250
Elioak family, deep	209, 227, 228
Gasquet family, deep, stony	420
Goldridge, family, deep	210, 222, 223, 225, 226, 230, 231, 261, 345, 346, 349
Haploxerults	103
Hartleton family, deep	209, 227, 228
Hecker family, deep	236, 250, 256
Holland family, deep	252, 253, 260, 261, 266, 312, 316, 327, 351
Holland family, deep, dioritic	522
Holland family, deep, dry	265
Holland family, deep, gabbroic	361
Holland family, deep, stony	335
Holyoke family	228, 244
Horseshoe family, deep	125
Hugo family, deep	232, 240, 245, 266, 324
Hugo family, deep, dioritic	554, 560
Hugo family, deep, dry	265
Hugo family, moderately deep	271, 272, 274, 320, 321,
Hullt family, deep	220

TABLE 7. Soil Components in Map Units (continued)

COMPONENT NAME	MAP UNIT(S)
Hullt family, deep, dry	221
Hungry family, deep	411
Ishi Pishi family, deep	402
Jayel family, moderately deep	420
Jayel family, moderately deep, stony	430, 431
Kistirn family, deep	225, 226, 260
Lithic Haploxeralfs, ultramafic	402, 403, 404, 405, 425
Lithic Xerochrepts, ultramafic	430
Lithic Xerorthents	300
Madden family, moderately deep	412
Maymen family	242, 243, 245, 246, 320, 321, 323
Maymen family, dioritic	501, 530
Melbourne family, deep	237, 238, 252, 253
Nanny family, deep	257, 336
Nanny family, deep, dioritic	525
Nanny family, moderately deep	259, 317
Oragran family	403, 404, 405, 431
Oxalis family, deep	250
Pits and Dumps	102
Race family, deep	258
Raisio family, moderately deep	356
Riverwash	100
Rock Outcrop	214, 243, 274, 280, 282, 300, 323, 340, 400, 405, 500, 501, 503, 517
Rogue family, deep	524
Rubble Land	400
Skalan family, deep	210, 230, 232, 260, 331, 345, 348, 351
Skalan family, mod. deep	235
Skinner family, deep	241, 244
Skymor family	254
Skymor family, ultramafic	409
Soulajule family, deep	238
Typic Xerofluvents	100
Voorhies family, moderately deep	282
Walnett family, deep, stony	420, 425, 430, 431
Wapal family, moderately deep	503, 550, 552, 554
Weitchpec family, moderately deep	403, 404
Woodseye family	257, 259
Xerochrepts	103

AIKEN FAMILY, DEEP

These soils are deep phase members of the clayey, oxidic, mesic family of Xeric Haplohumults. They have developed in material weathered from sedimentary, metasedimentary or metaigneous rock. They are on mountain sides, benches, and broad ridges at elevations of 500 to 4,500 feet. Slopes range from 5 to 50 percent. These soils are moderately well to well drained. Mean annual precipitation varies from 100 to 120 inches, and mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, off the Low Divide road next to a clearcut on a bend in a spur road, approximately 1.5 miles from the junction with Low Divide road; pit is about 20 feet from road on a northeast facing slope of 50 percent, under Douglas-fir, redwood, and tanoak with an understory of evergreen huckleberry, rhododendron, and tanoak, at 1,950 feet elevation; in the SE 1/4 of the SE 1/4 of section 35, T. 18 N., R. 1 E., H.B.M.

0-1 to 0 inches; fresh and decomposing needle and leaf litter.

A-0 to 7 inches; dark brown (7.5YR 4/4) loam, dark brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; soft, friable, slightly sticky and plastic; few very fine and fine roots; slightly acid (pH 6.1); abrupt smooth boundary.

Bt1-7 to 15 inches; strong brown (7.5YR 5/6) clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few thin clay films on ped faces and line pores; slightly acid (pH 6.1); abrupt wavy boundary.

Bt2-15 to 46 inches; brown (7.5YR 5/4) silty clay loam, reddish brown (5YR 4/4) moist; moderate fine

angular blocky structure; slightly hard, firm, sticky and plastic; few fine roots; few moderately thick and few thin clay films on ped faces and line pores; slightly acid (pH 6.1); clear smooth boundary.

Bt3-46 67 inches; strong brown (7.5YR 5/8) silty clay loam, strong brown (7.5YR 5/6) moist; moderate fine angular blocky structure; hard, firm, very sticky and plastic, many moderately thick clay films on ped faces and line pores; slightly acid (pH 6.1).

Range in Characteristics: Depth to sedimentary, metasedimentary or metaigneous rock ranges from 40 to over 60 inches. Mean annual soil temperature is estimated to be 50 to 59°F and the difference between mean summer and mean winter soil temperature is more than 9°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation is 15 to 30 percent in the argillic horizon. These soils are estimated to have at least 0.9 percent organic carbon in the upper 15 cm of the argillic horizon. Surface rock fragments range from 0 to 15 percent.

The A horizon has dry color of 5YR 5/6, 5/8, 7.5YR 4/4, 5/4, 5/6, 6/4, 6/6, or 7/4; and moist color of 5YR 4/4, 4/6, 4/8, 5/6, 7.5YR 4/4, 4/6, 10YR 4/3, or 4/4. It is loam or clay loam with 20 to 30 percent clay and 0 to 30 percent gravel. It is medium or slightly acid.

The Bt horizon has dry color of 5YR 5/6, 5/8, 6/8, 7/8, 7.5YR 5/4, 5/5, 5/6, 5/8, 6/5, 6/6, or 6/8; and moist color of 2.5YR 4/6, 5YR 4/5, 5/6, 4/8, 5/6, 5/8, 7.5YR 4/4, 4/6, 5/6, or 5/8. It is silty clay loam, clay loam, silty clay or clay with 30 to 50 percent clay and 0 to 20 percent gravel. It is slightly to strongly acid.

ALBUS FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, micaceous, frigid family of Ultic Haploxeralfs. They have developed in material weathered from mica schist. They are on mountainsides and ridges at elevations of 4,500 to 5,800 feet. Slopes range from 35 to 70 percent. These soils are well drained. Mean annual precipitation is about 60 inches and mean annual temperature is about 48°F.

Typical Pedon: Located in Trinity County, California, on South Fork Mountain, on Forest Service Road 2S02, approximately 0.7 miles west of the Cedar Gap junction; pit is about 50 feet upslope from road on a south facing slope of 40 percent under white fir, with a few Douglas-fir, at 4,585 feet elevation; in the SE 1/4 of the SE 1/4 of section 29, T. 28 N., R. 12 W., M.D.B.M.

0-0 to 1/2 inch; fresh and decomposing needle litter.

A-0 to 8 inches; light olive gray (5Y 6/2) gravelly loam, olive gray (5Y 4/2) moist; moderate medium and coarse granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; 15 percent pebbles; slightly acid (pH 6.2); clear wavy boundary.

Bt1-8 to 4 inches; pale olive (5Y 6/3) loam, olive (5Y 4/3) moist; moderate fine subangular blocky structure; soft friable, slightly sticky and slightly plastic; common fine, many medium, few coarse roots; few thin clay films on ped faces; 10 percent pebbles; slightly acid (pH 6.2); diffuse wavy boundary.

Bt2-14 to 26 inches; pale yellow (5Y 7/3) gravelly clay loam, olive (5Y 4/4) moist; moderate fine to medium subangular blocky structure; soft, friable, sticky and plastic; common fine and medium, few coarse roots; common moderately thick clay films on ped faces; 20 percent pebbles, 10 percent cobbles; medium acid (pH 6.0); diffuse wavy boundary.

Bt3-26 to 35 inches; light gray (5Y 7/2) very cobbly clay loam, olive (5Y 4/4) moist; moderate fine and medium subangular blocky structure; soft, friable, sticky and plastic; few fine and medium roots; many moderately thick clay films on ped faces; 25 percent pebbles; 20 percent cobbles; medium acid (pH 6.0);

clear wavy boundary.

Bt4-35 to 44 inches; pale yellow (5Y 8/3) very gravelly silt loam, olive yellow (5Y 6/6) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and plastic; few fine roots; common moderately thick clay films on ped faces; 30 percent pebbles; 5 percent cobbles; medium acid (pH 5.8); diffuse wavy boundary.

C-44 to 60 inches; white (5Y 8/1) gravelly silt loam, pale olive (5Y 6/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; 20 percent pebbles; medium acid (pH 5.6).

Range Characteristics: Depth to mica schist ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be less than 47°F, mean summer soil temperature is estimated to be 25 to 50°F, and the difference between mean summer and mean winter temperature is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation is about 40 percent in the upper 75 cm of the argillic horizon. All horizons contain visible flecks of mica and exhibit the greasy feel characteristic of that mineral.

The A horizon has dry color of 2.5Y 6/2, 10YR 6/2, 6/3, or 7/2; and moist color of 2.5Y 3/2, 5Y 3/2, 4/2, 10YR 3/2, or 4/3. Where colors are dark the horizon is too thin to be mollic. It is loam or silt loam with 15 to 27 percent clay and 0 to 25 percent gravel. It is neutral to medium acid.

The Bt horizon has dry color of 2.5Y 7/2, 7/4, 5Y 7/2, 7/3, or 7/4; and moist color of 2.5Y 4/4, 5/4, 5Y 4/4, 4/5, or 5/6. It is clay loam or silty clay loam with 27 to 35 percent clay and 25 to 50 percent gravel and 10 to 25 percent cobbles. It is slightly or medium acid.

The C horizon, when present has dry color of 2.5Y 7/2, 8/1, 8/2, 5Y 7/2, or 8/1; and moist color of 2.5Y 5/2, 6/4, 5Y 5/3, or 6/3. It is silty clay loam or silty clay with 10 to 35 percent gravel.

ALTHOUSE FAMILY, DEEP, STONY

These soils are deep, stony phase members of the loamy-skeletal, mixed, frigid family of Dystric Xerochrepts. They have formed in material weathered from metaigneous rock, diorite, and glacial till. They are on mountainsides and glacial moraines, at elevations of 3,800 to 6,000 feet. Slopes range from 30 to 70 percent. These soils are well drained. Mean annual precipitation is 80 to 110 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Del Norte County, California, near Sanger Lake on the southwestern side of the lake, approximately 200 feet from parking area, on a northeast facing slope of 60 percent under white fir, red fir, some Douglas-fir, brewer spruce and Sadler oak at 5,000 feet elevation; in the NE 1/4 of the NE 1/4 of section 5, T. 17 N., R. 5 E., H.B.M.

O-4 to 0 inches; fresh and decomposing needle and leaf litter.

A-0 to 8 inches; yellowish brown (10YR 5/6) gravelly loam, dark yellowish brown (10YR 3/4) moist; strong very fine granular structure; soft, friable, nonsticky and nonplastic; many very fine, common fine, few medium and coarse roots; 20 percent pebbles, 10 percent stones; medium acid (pH 6.0); clear smooth boundary.

Bw1-8 to 20 inches; yellowish brown (10YR 5/6) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak, very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, few medium and coarse roots; 15 percent pebbles, 10 percent cobbles; slightly acid (pH 6.2); clear smooth boundary.

Bw2-20 to 35 inches; yellowish brown (10YR 5/8) very stony loam, dark yellowish brown (10YR 4/4) moist;

weak, very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine, fine, medium and coarse roots; 20 percent pebbles, 20 percent stones; medium acid (pH 6.0); clear wavy boundary.

C-35 to 59 inches; light yellowish brown (2.5Y 6/4) very stony loam, olive brown (2.5Y 4/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; 15 percent pebbles, 20 percent stones; slightly acid (pH 6.2).

Range in Characteristics: The depth to metaigneous or diorite rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be about 44°F. Mean summer soil temperature is estimated to be about 48°F, and the difference to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-July through mid-October and moist throughout between November and April. The base saturation is about 10 to 14 percent between the depths of 10 and 30 inches. Surface stones range from 10 to 20 percent.

The A horizon has dry color of 10YR 3/2, 5/6, or 6/4; and moist color of 10YR 2/1, 2/2, 3/1, or 3/4. The horizon is too thin to be umbric. It has 20 to 45 percent gravel and 10 to 20 percent cobbles or stones. It is medium or strongly acid.

The Bw horizon has dry color of 10YR 5/6, 5/8, 6/4, 7/3, or 7/4; and moist color of 10YR 4/3, 4/4, 4/6 or 2.5Y 4/4. It is loam or sandy loam with 25 to 55 percent gravel and 10 to 25 percent cobbles or stones. It is slightly or medium acid.

Some pedons lack a C horizon.

ALTHOUSE FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, mixed, frigid family of Dystric Xerochrepts. They have formed in colluvial material weathered from metaigneous rock. They are on mountainsides and near ridges at elevations of 3,800 to 6,000 feet. Slopes range from 35 to 60 percent. These soils are well drained. Mean annual precipitation is about 80 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Del Norte County, California, south of Sanger Peak on the Sanger Peak road about 0.75 miles north of junction with Youngs Valley road; pit is about 50 feet above the road on a north-west facing slope of 40 percent under a brush cover of manzanita, canyon live oak and wild rose, with some knobcone pine and Douglas-fir at 5,200 feet elevation; in the SW 1/4 of the SE 1/4 of section 32, T. 18 N., R. 5 E., H.B.M.

0-1/2 to 0 inch; fresh and decomposing leaf litter.

A-0 to 5 inches; light yellowish brown (10YR 6/4) very gravelly loam, very dark gray (10YR 3/1) moist; very weak very fine granular structure; many very fine and fine, common medium, few coarse roots; 35 percent pebbles; neutral (pH 6.6); clear smooth boundary.

Bw1-5 to 18 inches; very pale brown (10YR 7/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine, many medium, few coarse roots; 35 percent pebbles; slightly acid (pH 6.4); clear smooth boundary.

Bw2-18 to 36 inches; very pale brown (10YR 7/3) very

gravelly loam, olive brown (2.5Y 4/4) moist; weak very fine subangular blocky structure, slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, medium and coarse roots; 35 percent pebbles, 10 percent cobbles and stones; slightly acid (pH 6.5); clear irregular boundary.

R-36 to 46 inches; weathered metavolcanic colluvium (serpentine influence).

Range in Characteristics: The depth to metaigneous rock (with serpentine influence) ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be about 44°F, mean summer soil temperature is estimated to be about 48°F, and the difference between mean summer and mean winter soil temperatures is assumed to be more than 9°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-July through mid-October and moist throughout between November and April. The base saturation is assumed to be about 20 to 40 percent between the depths of 10 and 30 inches. Surface rock fragments range from 0 to 10 percent.

The A horizon has dry color of 10YR 3/1, 3/2, 5/6, or 6/4; and moist color of 10YR 3/3, 3/4, or 4/4. Where colors are dark the horizon is too thin to be mollic or umbric. It has 30 to 50 percent gravel and 0 to 10 percent cobbles or stones. It is neutral or slightly acid.

The Bw horizon has dry color of 10YR 5/6, 5/8, 6/4, 7/3, or 7/4; and moist color of 10YR 4/3, 4/4, or 4/6. It has 35 to 50 percent gravel and 0 to 20 percent cobbles or stones.

Some pedons have a C horizon.

BINS FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, frigid family of Typic Xerumbrepts. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountains and broad ridges at elevations of 4,500 to 5,500 feet. Slopes range from 5 to 70 percent. These soils are well drained. Mean annual precipitation ranges from 70 to 110 inches and mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near Bear Basin Butte, in a roadcut on a spur road that goes to the top of Bear Basin Butte, approximately 0.5 miles from junction with Forest Service road 17N04, on a northeast facing slope of 45 percent under white fir and red fir, with a few Douglas-fir, and an understory of sadler oak, Ribes sp., deerfoot, and blueberry at 5,000 feet elevation; in the SW 1/4 of the SW 1/4 of section 3, T. 16 N., R. 4 E., H.B.M.

0-2 to 0 inches; fresh and decomposing needle litter.

A-0 to 10 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, nonsticky and nonplastic;
common very fine, fine and medium, few coarse roots; strongly acid (pH 5.2); clear wavy boundary.

BA-10 to 21 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 4/3) moist; very weak very fine subangular blocky parting to weak fine granular structure; slightly hard, friable, nonsticky and nonplastic; few fine, common medium, and few coarse roots; 15 percent pebbles; strongly acid (pH 5.3); clear wavy boundary.

Bw-21 to 58 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable; nonsticky and nonplastic; few fine, common medium, and few coarse roots; strongly acid (pH 5.4); abrupt wavy boundary.

R-58 inches; highly fractured metamorphic rock (fractures less than 4.5 inches apart).

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be less than 47°F, mean summer soil temperature is estimated to be 25 to 50°F, and the difference between mean summer and mean winter soil temperature is estimated to be more than 9°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June and to mid-October, and moist throughout between November and April. The base saturation is 6 to 10 percent in the epipedon.

The A horizon has dry color of 10YR 3/3, 4/2, 4/3, 5/3, or 5/4; and moist color of 10YR 2/2, 3/2, or 3/3. It has 15 to 25 percent clay and 0 to 15 percent gravel. It is slightly or medium acid.

The Bw horizon has dry color of 10YR 5/3, 5/4, 6/3, 6/4, 7/4, 8/3, 2.5Y 5/4, 6/2, 6/4, 7/2, 7/3, 7/4, or 7/5; and moist color of 10YR 3/2, 3/3, 4/2, 4/4, 5/3, 6/4, 2.5Y 4/2, 4/4, 5/2, 5/3, 6/6, or 6/7. It is loam, silt loam, or clay loam, with 18 to 28 percent clay, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 5 to 30 percent gravel. It is medium or strongly acid.

Some pedons have a C horizon.

CHAIX FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the coarse-loamy, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from diorite. They are on mountainsides and ridges at elevations of 600 to 4,800 feet. Slopes range from 30 to 90 percent. These soils are well to somewhat excessively drained. Mean annual precipitation is about 70 to 100 inches and mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, on north end of jeep road, approximately 150 yards east of junction with Forest Service road 7N02, on a south facing slope of about 60 percent under Douglas-fir, tanoak, and madrone, with some canyon live oak, at 3,800 feet elevation; in the NE 1/4 of the NW 1/4 of section 10, T. 6 N. R. 6 E., H.B.M.

0-1 to 0 inch; fresh and decomposing needle litter.

A1-0 to 8 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine and medium, and few coarse roots; 15 percent pebbles; strongly acid (pH 5.5); gradual wavy boundary.

A2-8 to 19 inches; yellowish brown (10YR 5/6) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 30 percent pebbles; strongly

acid (pH 5.5); gradual wavy boundary.

C-19 to 40 inches; yellowish brown (10YR 5/6) gravelly coarse sandy loam, dark yellowish brown (10YR 4/6) moist; single grain; loose, nonsticky and nonplastic; common very fine, fine, and medium, few coarse roots; 30 percent pebbles; very strongly acid (pH 5.0); abrupt wavy boundary.

Cr-40 inches; highly weathered diorite rock.

Range in Characteristics: Depth to highly weathered diorite rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depth of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and June. The base saturation is estimated to be about 30 percent between 10 and 30 inches below the surface.

The A horizon has dry color of 10YR 4/3, 5/3, 5/4, or 6/5; and moist color of 10YR 3/3, 4/3, or 4/4. Where colors are dark the horizon is too thin to be umbric. It is loam or sandy loam with 10 to 45 percent gravel and 0 to 20 percent stones. It is medium or strongly acid.

The C horizon has dry color of 10YR 5/4, 5/6, or 6/4; and moist color of 10YR 4/3, 4/4, or 4/6. It has 0 to 35 percent gravel and 0 to 25 percent stones. It is slightly to strongly acid.

CHENANGO FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Typic Dystrochrepts. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountainsides at elevations of about 500 to 3,500 feet. Slopes range from 35 to 70 percent. These soils are well drained. Mean annual precipitation is about 100 inches and mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, west of South Red Mountain on Simpson road above Potato Patch Creek, about 2.5 miles from junction with Simpson's private Klamath road; pit is about 15 feet above the road on a southeast facing slope of 60 percent under tanoak and madrone, with some Douglas-fir, redwood and Port Orford cedar at 2,400 feet elevation; in the SE 1/4 of the SE 1/4 of section 24, T. 13 N. R. 2 E., H.B.M.

A1-0 to 3 inches; pale brown 10YR 6/3) extremely gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, nonsticky and non-plastic; many very fine and fine, common medium roots; 65 percent pebbles; strongly acid (pH 5.4); clear smooth boundary.

A2-3 to 13 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; few very fine, common fine, medium and coarse roots; 45 percent pebbles; strongly acid (pH 5.4); gradual wavy boundary.

Bw1-13 to 22 inches; brownish yellow (10YR 6/6) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, medium and coarse roots; 45 percent pebbles; strongly acid (pH 5.5); gradual wavy boundary.

Bw2-22 to 23 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular

blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine, few fine and medium roots; 60 percent pebbles; medium acid (pH 5.6); clear wavy boundary.

Bw3-33 to 55 inches; brownish yellow (10YR 6/6) gravelly clay loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine and medium roots; 15 percent pebbles, 5 percent cobbles;

C-55 to 60 inches; white (2.5Y 8/2) gravelly clay loam, light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few medium roots; 15 percent pebbles; medium acid (pH 5.7).

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 40 to over 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually moist from mid-October through August. The base saturation is about 6 to 14 percent between the depths of 10 and 30 inches.

The A horizon has dry color of 10YR 5/3, 5/4, 6/2, 6/4, 6/5, or 6/6; and moist color of 10YR 3/3, 4/4, 5/3, or 5/6. It is loam or silt loam with 20 to 27 percent clay and 10 to 65 percent gravel. Where colors are dark, the horizon is too thin to be mollic.

The Bw horizon has dry color of 10YR 5/4, 6/4, 6/5, 6/6, 7/4, 7/5, 7/6, 8/2, 8/4, 2.5Y 7/2, 8/2, or 8/4. It is loam, silt loam or clay loam with 20 to 30 percent clay, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 35 to 65 percent gravel. It is strongly or medium acid.

The C horizon has dry color of 2.5Y 8/2, 8/3, or 8/6; and moist color of 2.5Y 5/4, 6/4, or 8/6. It has 20 to 60 percent gravel and 0 to 10 percent cobbles.

Some pedons lack a C horizon.

CLALLAM FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Dystric Xerochrepts. These soils have developed in material weathered from metasedimentary or metaigneous rock. They are on mountain sides at elevations of 400 to 4,800 feet. Slopes range from 30 to 70 percent. The soils are well drained. The mean annual precipitation ranges from 50 to 100 inches. The mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, on Salyer-Mad River road, about 4 miles south of Friday Ridge road (6N08); in a roadcut on a northwest facing slope of 35 percent under Douglas-fir, tanoak, madrone and canyon live oak at 2,100 feet elevation; in the NW 1/4 of the NE 1/4 of section 34, T. 6 N., R. 5 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 4 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic, common very fine and medium, few fine and coarse roots; 35 percent pebbles; strongly acid (pH 5.3); gradual smooth boundary.

BA-4 to 13 inches; very pale brown (10YR 7/3) extremely gravelly loam, yellowish brown (10YR 5/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and medium, few fine and coarse roots; 55 percent pebbles, 5 percent cobbles; strongly acid (pH 5.3); gradual smooth boundary.

Bw-13 to 30 inches; very pale brown (10YR 8/3) extremely gravelly clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, sticky and plastic; common very fine, few fine, medium, and coarse roots; 55 percent pebbles, 10 percent cobbles; strongly acid (pH 5.3); gradual smooth boundary.

C-30 to 53 inches; white (2.5Y 8/2) extremely gravelly loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine, fine, and coarse roots; 60 percent pebbles, 25 percent cobbles; strongly acid (pH 5.2); abrupt irregular boundary.

R-53 inches; fractured rock, fractures 2 to 6 inches apart.

Range in Characteristics: Depth to metasedimentary or metaigneous rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-July through mid-October and moist throughout between November and April. The base saturation ranges from 15 to 45 percent between the depths of 10 and 40 inches.

The A horizon has dry color of 10YR 4/4, 5/3, 6/3, 7/3, 7/4, or 8/2; and moist color of 10YR 3/2, 3/3, 4/2, 4/3, 4/4, or 5/4. Where colors are dark the horizon is too thin to be umbric. It is sandy loam, loam, or clay loam with 15 to 45 percent gravel and 0 to 15 percent cobbles. It is slightly to strongly acid.

The Bw horizon has dry color of 10YR 5/8, 6/4, 6/6, 7/3, 7/4, 7/6, 8/3, 8/4, or 8/6; and moist color of 10YR 4/3, 4/4, 4/5, 5/3, 5/4, 5/5, 5/6, or 6/4. It is loam or clay loam, with 35 to 55 percent gravel and 0 to 15 percent cobbles.

The C horizon has dry color of 10YR 6/5, 8/4, 8/6, 2.5Y 6/4, or 8/2; and moist color of 10YR 5/4, 6/8, 2.5Y 5/2, 5/4, 6/2, or 7/4. It has 30 to 60 percent gravel and 0 to 25 percent cobbles.

Some pedons lack a C horizon.

Note: A dry phase of this soil was named as a mapping unit component. It is morphologically the same, but is located on southerly aspects.

CLALLAM FAMILY, DEEP, EXTREMELY GRAVELLY

These soils are deep, extremely gravelly phase members of the loamy-skeletal, mixed, mesic family of Dystric Xerochrepts. They have developed from sedimentary, metasedimentary or metaigneous rock. They are on ridges and colluvial mountainsides at elevations of 600 to 4,800 feet. Slopes range from 35 to 85 percent. These soils are somewhat excessively drained. Mean annual precipitation varies from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near the headwaters of South Fork Mad River, on a spur road 1.2 miles south of the intersection with Forest Service road 2S05, on a southwest facing slope of 65 percent under Douglas-fir, canyon live oak, madrone and whitethorn at 3,800 feet elevation; in the NW 1/4 of the SW 1/4 of section 6, T. 26 N., R. 12 W., M.D.B.M.

A-0 to 12 inches; light brownish gray (10YR 6/2) extremely gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, non-sticky and nonplastic; many fine and medium roots; 80 percent pebbles; neutral (pH 6.8); abrupt wavy boundary.

BA-12 to 20 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 5/3) moist; weak fine granular structure; soft, friable, non-sticky and nonplastic; many fine and medium roots; 70 percent pebbles; neutral (pH 6.8); clear wavy boundary.

Bw-20 to 36 inches; white (10YR 8/2) extremely gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine subangular structure; soft, friable, slightly sticky and slightly plastic; common medium and coarse roots; 60 percent pebbles; neutral (pH 7.0); clear wavy boundary.

C-36 to 42 inches; very pale brown (10YR 7/4) extremely gravelly loam, light yellowish brown (10YR 6/4) moist; weak fine granular structure; soft friable, non-sticky and non-plastic; common medium and coarse roots; 80 percent pebbles; neutral (pH 7.2).

R-42 inches; hard fractured graywacke.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation ranges from 15 to 45 percent between the depths of 10 and 30 inches. Surface rock fragments range from 10 to 50 percent.

The A horizon has dry color of 10YR 5/3, 5/4, 6/2, 6/3, or 6/4. Moist colors are 10YR 4/2, 4/3, or 4/4. It is loam or sandy loam, with 50 to 90 percent gravel. It is slightly acid to mildly alkaline.

The Bw horizon has dry color of 10YR 7/6, 8/2, or 8/3. Moist colors are 10YR 4/5, 5/4, or 5/5. It is loam, sandy loam, or light clay loam, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 50 to 90 percent gravel. It is neutral or slightly acid.

The C horizon has dry color of 10YR 6/4, 6/5, 7/4, or 8/4. Moist colors are 10YR 5/4, 6/4. It has 50 to 80 percent gravel and 0 to 40 percent cobbles. It is neutral to medium acid.

CLALLAM FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountain sideslopes at elevations of 400 to 4,800 feet. Slopes range from 30 to 90 percent. These soils are well drained. Mean annual precipitation ranges from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near Shelly Creek on County Road 316, approximately .5 mile north of the junction with Forest Service Road 18N17; pit is about 25 feet upslope from road on a west facing slope of 75 percent under Douglas-fir, tanoak, and madrone with some sugar pine, dogwood and Canyon live oak at 2,600 feet elevation; in the SE 1/4 of the NW 1/4 of section 11, T. 18 N., R 3 E., H.B.M.

O-4 to 0 inches; fresh and decomposing leaf and needle litter.

A-0 to 4 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine roots; 50 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

BA-4 to 10 inches; reddish yellow (7.5YR 6/6) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 35 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

Bw-10 to 26 inches; reddish yellow (5YR 6/6) very gravelly loam, yellowish red (5YR 4/6) moist; moderate very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, medium and coarse roots; 45 percent pebbles; slightly acid (pH 6.4); abrupt wavy boundary.

R-26 inches; hard greenstone bedrock; fractures 4-6 inches apart.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation ranges from 20 to 35 percent between the depths of 10 and 30 inches or above a lithic contact. Surface rock fragments range from 0 to 10 percent.

The A horizon has dry color of 7.5YR 5/2, 5/4, 10YR 4/2, 5/2, 5/3, 5/4, 5/6, 6/2, 6/3, or 6/4. Moist colors are 7.5YR 3/2, 3/4, 4/3, 4/4, 10YR 3/2, 3/3, 3/4, 4/2, 4/3, 4/4, 4/6, or 5/6. Where colors are dark the horizon is too thin to be umbric. It is loam or clay loam with 15 to 50 percent gravel. It is slightly to strongly acid.

The Bw horizon has dry color of 5YR 5/6, 6/6, 7.5YR 5/6, 6/6, 10YR 5/3, 5/6, 5/8, 6/3, 7/2, 7/4, or 7/6. Moist colors are 5YR 4/4, 4/6, 7.5YR 4/4, 4/6, 10YR 4/2, 4/3, 4/4, 5/4, 6/4, or 6/5. It has 35 to 60 percent gravel.

Some pedons have a C horizon.

CLALLAM FAMILY, MODERATELY DEEP, GABBROIC

These soils are moderately deep, gabbroic phase members of the loamy-skeletal, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from gabbro. They are on mountain sideslopes at elevations of 1,000 to 3,500 feet. Slopes range from 40 to 65 percent. These soils are well drained. Mean annual precipitation ranges from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near Monkey Creek on Forest Service Road 18N14, about 1 mile north of junction with 18N14; pit is below road on a southeast facing slope of 60 percent under tanoak, madrone, and Canyon live oak at about 2,500 feet; in the NW 1/4 of the NW 1/4 of section 12, T. 18 N., R. 3 E., H.B.M.

0-1 to 0 inch; leaves and decomposing litter.

A-0 to 3 inches; brownish yellow (10YR 6/6) very gravelly loam, brown (7.5YR 4/4) moist; weak very fine granular structure; soft, friable, non-sticky and non-plastic; few very fine and fine roots; 40 percent pebbles; medium acid (pH 5.8); clear smooth boundary.

BA-3 to 20 inches; very pale brown (10YR 7/4) extremely gravelly silt loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; 60 percent pebbles; medium acid (pH 5.9); clear smooth boundary.

Bw-20 to 36 inches; very pale brown (10YR 8/4) very gravelly loam, reddish yellow (7.5YR 6/6) moist; moderate fine to very fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine, medium and coarse roots; 40 percent pebbles; medium acid (pH 5.9); clear wavy boundary.

Cr-36 to 45 inches; soft weathered gabbro.

Range in Characteristics: The depth to basic igneous rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation is 20 to 35 percent between the depths of 10 and 30 inches or above a lithic contact.

The A horizon is 10YR 3/2, 5/4, 5/6, or 6/6. Moist colors are 7.5YR 4/4, 10YR 3/3, 3/4, 4/3, or 4/4. Where colors are dark, the horizon is too thin to be umbric. It has 20 to 50 percent gravel. It is slightly or medium acid.

The Bw horizon is 10YR 4/3, 4/4, 5/4, 5/6, 5/8, or 8/5. Moist colors are 7.5YR 5/6, 6/6, 10YR 4/4, 5/4, or 5/6. It has 35 to 75 percent gravel and 0 to 10 percent cobbles. It is neutral to medium acid.

Some pedons have a C horizon.

CLALLAM FAMILY, MODERATELY DEEP, UNSTABLE

These soils are moderately deep, unstable phase members of the loamy-skeletal, mixed, mesic family of Dystric Xerochrepts. These soils have developed in material weathered from highly fractured metasedimentary rock and graphitic schist. They are on unstable mountain sideslopes at elevations of 400 to 4,800 feet. Slopes range from 35 to 90 percent. The soils are well drained. Mean annual precipitation ranges from 60 to 90 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near Mikes Rock on Forest Service Road 27N01, 1.1 miles west of intersection with 12W11, 5 feet south of road, on a north facing slope of 45 percent under white fir, Douglas-fir, ponderosa pine, white and black oaks, and incense cedar at 4,500 feet elevation; in the SE 1/4 of the NE 1/4 of section 23, T. 26 N., R. 12 W., M.D.B.M.

A1-0 to 6 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; strong coarse granular structure; soft, very friable, non-sticky and slightly plastic; many medium and coarse roots; 5 percent pebbles; slightly acid (pH 6.4); gradual wavy boundary.

A2-6 to 12 inches; pale brown (10YR 6/3), loam, dark brown (10YR 4/3); moderate medium granular structure; slightly hard very friable non-sticky and slightly plastic; many moderate and medium roots; 10 percent pebbles; medium acid (pH 5.8); clear wavy boundary.

BA-12 to 19 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse roots; 20 percent shale pebbles; medium acid (pH 5.8); diffuse wavy boundary.

Bw1-19 to 28 inches; very pale brown (10YR 7/3) extremely gravelly loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse roots; 80 percent shale pebbles; medium acid (pH 5.6); gradual wavy bound-

ary.

Bw2-28 to 36 inches; very pale brown (10YR 7/4) very gravelly silty clay loam, yellowish brown (10YR 5/4) moist; strong fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; 35 percent shale pebbles; strongly acid (pH 5.4); diffuse wavy boundary.

C-36 to 39 inches; pale yellow (2.5Y 7/4) very gravelly silty clay loam, light olive brown (2.5Y 5/4) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; 40 percent shale pebbles; strongly acid (pH 5.2).

R-39 to 46 inches; sheared shale.

Range in Characteristics: The depth to sheared shale or schist ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation ranges from 20 to 50 percent between the depths of 10 and 30 inches, or above a lithic contact. The soil has 35 to 65 percent rock fragments at depths of 10 inches to a lithic contact.

The A horizon is 10YR 5/2, 5/3, 6/2, or 6/3. Moist colors are 3/2, 4/2, 4/3, or 4/4. Where colors are dark the horizon is too thin to be umbric. It has 5 to 50 percent gravel. It is neutral to medium acid.

The Bw horizon is 10YR 6/4, 7/2, 7/3, or 7/4. Moist colors are 10YR 4/2, 4/4, 5/4, or 2.5Y 4/4. It is loam or clay loam, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 35 to 65 percent gravel. It is medium or strongly acid.

The C horizon, is 2.5Y 6/2, or 7/4. Moist colors are 2.5Y 5/2, 5/4, or 5/6. It is loam or silty clay loam with 35 to 65 percent gravel.

Some pedons lack a C horizon.

COTATI FAMILY, DEEP, GABBROIC

These soils are deep, gabbroic phase members of the fine, mixed, mesic family of Ultic Palexeralfs. They have developed in material weathered from basic igneous rock. They are on mountain sideslopes at elevations of 1,000 to 3,500 feet. Slopes range from 20 to 40 percent. These soils are well drained. Mean annual rainfall is about 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near the Oregon border off county road 315, about .5 mile south of the border, downslope from the road on a southeast facing slope of 20 percent under manzanita, salal, tanoak and huckleberry with some sugar pine, incense cedar and knobcone pine at 3,200 feet; in the SE 1/4 of the NW 1/4 section 3, T. 18 N. R. 3 E. H.B.M.

0-1 inch to 0; fresh and decomposing needle litter.

A-0 to 7 inches; very pale brown (10YR 8/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; soft, friable, slightly sticky and plastic; common very fine, few fine and medium roots; 15 percent pebbles; medium acid (pH 5.8); abrupt wavy boundary.

Bt1-7 to 15 inches; very pale brown (10YR 8/4) clay, yellowish brown (10YR 5/6) moist; strong fine subangular blocky structure; slightly hard, firm sticky and plastic; few very fine, fine, medium roots; common moderately thick clay films on ped faces and line pores; medium acid (pH 5.6); clear smooth boundary.

Bt2-15 to 22 inches; yellow (10YR 7/6) clay, yellowish brown (10YR 5/8) moist; strong, fine angular blocky structure; hard, firm, very sticky and plastic; few very fine, fine, medium and coarse roots; continuous thick clay films on ped faces and line pores;

medium acid (pH 5.6); clear smooth boundary.

Bt3-22 to 42 inches; yellow (10YR 7/8) clay loam, yellowish brown (10YR 5/8) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; common moderately thick clay films on ped faces and line pores; medium acid (pH 5.8); clear smooth boundary.

C-42 to 60 inches; very pale brown (10YR 8/4) loam, brownish yellow (10YR 6/6) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few moderately thick clay films on ped faces and line pores; medium acid (pH 5.6).

Range in Characteristics: The depth to gabbro ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 4 and 12 inches is usually dry in all parts from mid-June through mid-October, and moist throughout from November and April. The base saturation ranges between 50 and 70 percent in the upper 75 cm of the argillic horizon.

The A horizon is 10YR 5/3, 6/3, 6/4, 7/3, or 8/4. Moist colors are 10YR 3/2, 4/2, 4/3, or 4/4. Where colors are dark the horizon is too thin to be mollic. It is loam or clay loam with 15 to 30 percent clay and 5 to 35 percent gravel. It is slightly or medium acid.

The Bt horizon is 5YR 5/3, 7/2, 7.5YR 5/4, 6/4, 10YR 6/4, 7/3, 7/4, 7/6, 7/8, or 8/4. Moist colors are 5YR 4/4, 6/4, 7.5YR 4/4, 5/4, 10YR 4/3, 4/4, 5/4, 5/6, or 5/8. It is clay loam or clay with 30 to 45 percent clay, increasing by at least 15 percent over the horizon above. It has 0 to 10 percent gravel.

COYATA FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Typic Xerumbrepts. They have developed in place from metasedimentary rock. They occur on mountain ridges and sideslopes at elevations of 3,000 to 4,000 feet. Slopes range from 35 to 70 percent. These soils are somewhat excessively drained.

Typical Pedon: Located in Humboldt County, California, on the road between Grouse Mountain and Bee Tree Creek, about 1.5 miles from Grouse Mountain, on a northeast facing slope of 60 percent under Douglas-fir, tanoak, with a few sugar pine at 3,700 feet elevation; in the SW 1/4 of the SE 1/4 of section 32, T. 5 N., R. 5 E., H.B.M.

0-3 to 0 inches; fresh and decomposing needle and leaf litter.

A1-0 to 4 inches; brown (10YR 5/3) very gravelly loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, non-sticky and non-plastic; many very fine and fine, common medium roots; 35 percent pebbles, 5 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

A2-4 to 10 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, non-sticky and non-plastic; many very fine and fine, common medium roots; 25 percent pebbles, 5 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

Bw-10 to 21 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, few medium roots; 35 percent pebbles, 5 percent cobbles; medium acid (pH 5.8); clear smooth boundary.

C1-21 to 35 inches; light brownish gray (2.5Y 6/2) extremely gravelly clay loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, friable, slightly

sticky and slightly plastic; common very fine and fine, few medium roots; 80 percent pebbles, 10 percent cobbles; strongly acid (pH 5.4); clear, wavy boundary.

C2-35 to 51 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, olive gray (5Y 4/2) moist; moderate, medium, subangular blocky structure; soft, friable, non-sticky and non-plastic; few very fine, fine, medium and coarse roots; 10 percent pebbles; 5 percent cobbles; strongly acid (pH 5.4).

R-51 inches; fractured metasedimentary rock.

Range in Characteristics: The depth to metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation is estimated to be about 30 to 40 percent in the epipedon.

The A horizon has dry color of 10YR 4/3, 5/2, or 5/3; and moist color of 10YR 3/1, 3/2, or 3/3. It is loam or silt loam with 15 to 50 percent gravel, and 0 to 5 percent cobbles.

The Bw horizon has dry color of 10YR 5/4, 6/3, or 6/4; and moist colors of 10YR 3/3, 4/3, or 4/4. Dark colors do not extend to a sufficient depth to be pachic. It is sandy loam, loam, or clay loam not increasing in clay content by as much as 1.2 times that of the above horizon. It has 30 to 50 percent gravel, and 0 to 10 percent cobbles. It is slightly or medium acid.

The C horizon has dry color of 2.5Y 6/2, or 7/2; and moist colors of 2.5Y 4/1, 4/2, 5/2, or 5/3. It is sandy loam, loam, or clay loam with 10 to 90 percent gravel and 0 to 10 percent cobbles. It is medium or strongly acid.

Note: A dry phase of this soil was named as a mapping unit component. It is morphologically the same, but is located only on southerly aspects.

DEADMAN FAMILY, DEEP

These soils are deep phase members of the coarse-loamy, mixed, frigid family of Pachic Xerumbrepts. They have developed in material weathered from dioritic rock. They are on ridges and mountain sideslopes at elevations of 4,500 to 6,500 feet. Slopes range from 0 to 65 percent. The soils are well or somewhat excessively drained. Mean annual precipitation is about 70 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Humboldt County, California on Ammon Ridge Road (5N01), about .75 mile from Grouse Mountain junction (6N01); pit is about 75 feet below the road on a southeast facing slope of 35 percent under white fir with a few chinquapin, at 5,000 feet elevation; in the SE 1/4 of the SE 1/4 of section 24, T. 5 N., R. 4 E., H.B.M.

A-0 to 7 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak, fine granular structure; soft, very friable, non-sticky and non-plastic; many very fine, fine, medium, few coarse roots; strongly acid (pH 5.3); clear smooth boundary.

AB1-7 to 26 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; weak fine subangular blocky structure; soft, very friable, non-sticky and non-plastic; common very fine, fine, many medium, common coarse roots; strongly acid (pH 5.3); clear smooth boundary.

AB2-26 to 35 inches; dark brown (10YR 3/3) loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure breaking to weak fine granular; soft, very friable, non-sticky and non-plastic; common very fine, fine, medium, and coarse roots; strongly acid (pH 5.2); clear smooth boundary.

BA-35 to 53 inches; brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky parting to weak fine granular structure; soft, very friable, non-sticky and non-plastic; common very fine and fine, few medium and coarse roots; strongly acid (pH 5.6); clear wavy boundary.

Cr-53 to 60 inches; highly decomposed quartz diorite.

Range in Characteristics: Depth to diorite ranges from 40 to more than 60 inches. The mean annual soil temperature is 45°F, mean summer soil temperature is 48°F, and the difference between mean summer and mean winter soil temperatures is more than 9°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout from November through April. The base saturation in the epipedon is about 25 to 30 percent.

The A horizon is 10YR 3/1, 3/2, 3/3, 4/2, 4/3, or 4/4. Moist colors are 10YR 2/1, 2/2, 3/1, 3/2, or 3/3. It is loam or sandy loam with 0 to 20 percent gravel. It is slightly to strongly acid.

The B horizon is 10YR 4/3, 5/4, or 2.5Y 6/4. Moist colors are 10YR 3/2, 4/4, or 2.5Y 4/4. It has 5 to 30 percent gravel.

Some pedons have a C horizon. It is 10YR 5/4, 6/4, or 5/6. Moist color is 10YR 3/4 or 7.5YR 4/4. It is loam, loamy sand, or sandy loam with 20 to 50 percent gravel.

Additional Data: Soil moisture and temperature data were obtained at this site.

DEADMAN FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the coarse-loamy, mixed, frigid family of Pachic Xerumbrepts. They have developed in material weathered from quartz diorite rock. They occur on mountain sideslopes at elevations of 4,500 to 6,500 feet. Slopes range from 0 to 30 percent. These soils are somewhat excessively drained. Mean annual precipitation is about 70 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Humboldt County, California, on Horse Trail Ridge (trail 6E08), about 3/4 mile north of Water Dog Lakes on an east facing slope of 15 percent under sulfur flower, lupine, mountain brome, noble fir and incense cedar at 6,000 feet elevation; in the NE 1/4 of section 34, T. 9 N., R. 6 E., H.B.M.

A1-0 to 14 inches; dark brown (10YR 3/3) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, non-sticky and non-plastic; many very fine and fine roots; many fine interstitial pores; 15 percent pebbles; very strongly acid (pH 5.0); diffuse wavy boundary.

A2-14 to 24 inches; dark yellowish brown (10YR 3/4) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, non-sticky and non-plastic; many fine and very fine roots; many fine interstitial pores; 15 percent pebbles strongly acid (pH 5.2); gradual wavy boundary.

AC-24 to 32 inches; dark yellowish brown (10YR 4/4) gravelly coarse sandy loam, brown to dark brown (7.5YR 4/4) moist; massive; soft, very friable, non-sticky and non-plastic; many fine, few medium roots; many fine interstitial pores; 20 percent pebbles; strongly acid (pH 5.5); irregular boundary.

R-32 inches; hard quartz diorite.

Range in Characteristics: The depth to diorite ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 45°F, mean summer soil temperature is estimated to be about 48°F, and the difference between mean summer and mean winter soil temperatures is more than 9°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July to mid-October, and moist throughout from November to April. The base saturation in the epipedon is about 30 to 40 percent.

The A horizon has dry color of 10YR 3/2, 3/3, 3/4, 4/2, 4/3, or 4/4; and moist color of 10YR 2/2, 3/2, or 3/3. It is sandy loam or coarse sandy loam, with 0 to 20 percent gravel. It is strongly or very strongly acid.

The AC horizon has dry color of 10YR 7/4, 6/4 or 4/4; and moist color of 10YR 4/4 or 7.5YR 4/4. It is coarse sandy loam, or loamy coarse sand, with 0 to 30 percent gravel.

Some pedons lack a C horizon.

DEADWOOD FAMILY

These soils are members of the loamy-skeletal, mixed, mesic family of Dystric Lithic Xerochrepts. They have developed in material weathered from sedimentary, metasedimentary or metaigneous rock, and colluvium. They are on ridges and mountain sideslopes at elevations of 600 to 4,800 feet. Slopes range from 35 to 85 percent. The soils are well to somewhat excessively drained. Mean annual precipitation varies from about 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, near Lonesome Ridge, on Forest Service Road 13N01, about 1 mile NE of the top of Barren Butte; in the roadcut on a northeast facing slope of 35 percent under rhododendron, Sadler oak, tanoak, chanquapin, with some Douglas-fir and ponderosa pine at 3,400 feet elevation; in the SE 1/4 of the SW 1/4 of section 17, T. 12 N., R. 4 E., H.B.M.

O-5 inches to 0; fresh and decomposing leaf and needle litter.

A-0 to 5 inches; yellowish brown (10YR 5/6) gravelly loam, dark yellowish brown (10YR 4/4) moist; very weak very fine sub-angular blocky structure; soft, very friable, non-sticky and slightly plastic; common very fine and fine, few medium and coarse roots; 15 percent pebbles; medium acid (pH 5.8); clear wavy boundary.

Bw1-5 to 14 inches; brownish yellow (10YR 6/6) gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, many fine, common medium and coarse roots; 30 percent pebbles, 10 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

Bw2-14 to 18 inches; light yellowish brown (2.5Y 6/4) very gravelly loam, light olive brown (2.5Y 5/6) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine, medium and coarse roots; 50 percent pebbles, 10 percent cobbles; medium acid (pH 5.9); abrupt wavy boundary.

R-18 inches; fractured metasedimentary rock; fractures 2-6 inches.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 10 to 20 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depth of 8 inches and a lithic contact is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation just above a lithic contact is about 10 to 20 percent. Surface rock fragments range from 0 to 25 percent.

The A horizon is 10YR 4/3, 5/6, 6/3, 7/2, 7/4, or 8/2. Moist colors are 10YR 3/4, 4/3, 4/6, or 5/4. It is loam or sandy loam, with 10 to 35 percent gravel and 0 to 5 percent cobbles. It is neutral to medium acid.

The Bw horizon is 10YR 8/3, 8/2, 7/3, 7/2, 6/6, 6/4, 6/3, 5/4, 5/2, 2.5Y 7/3, 7/2, 6/4, or 6/2. Moist colors are 10YR 5/6, 5/4, 5/3, 4/4, 4/3, 4/2, 3/4, 2.5Y 5/6, 5/4, or 4/2. It is loam, sandy loam or light clay loam, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 30 to 50 percent gravel and 0 to 20 percent cobbles. It is slightly to strongly acid.

Canyon live oak and annual grass vegetation occurs on this soil on southerly aspects and in more southerly parts of the Forest.

DOTY FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Pachic Xerumbrepts. They have developed in place from metasedimentary rock. They are on ridges and mountain sideslopes at elevations of 1,000 to 4,500 feet. Slopes range from 25 to 70 percent. Mean annual precipitation varies from 55 to 75 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, along the Van Duzen River Road, about 5.5 miles from the Mad River Ranger Station; pit is about 20 yards upslope from the road on a northwest facing slope of 45 percent under white oak and Douglas-fir at 2,560 feet elevation; in the SW 1/4 of the SW 1/4 of section 9, T. 1 S., R. 6 E., H.B.M.

A-0 to 7 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; strong fine subangular blocky breaking to moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine and medium roots; 5 percent gravel; neutral (pH 6.8); gradual smooth boundary.

BA-7 to 14 inches; yellowish brown (10YR 5/4) clay loam, very dark grayish brown (10YR 3/2) moist; strong very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine, common moderate, few coarse roots; 10 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bw1-14 to 25 inches; brown (10YR 5/3) cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine, common moderate, few coarse roots; slightly acid (pH 6.2); 10 percent cobbles, 5 percent gravel; diffuse wavy

boundary.

Bw2-25 to 40 inches; pale brown (10YR 6/3) cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common moderate, few coarse roots; slightly acid (pH 6.2); 10 percent cobbles, 5 percent gravel; diffuse wavy boundary.

BC-40 to 60 inches; light yellowish brown (10YR 6/4) cobbly clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; slightly acid (pH 6.2); 10 percent cobbles, 10 percent gravel.

Range in Characteristics: The depth to metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 4 and 12 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation is about 35 to 45 percent in the epipedon.

The A horizon is 10YR 3/2, 4/1, 5/1, 5/2, 5/3, or 5/4. Moist colors are 10YR 2/2, 3/1, or 3/2. It is loam, silt loam or clay loam with 0 to 25 percent gravel. It is neutral to medium acid.

The Bw horizon is 10YR 5/2, 5/2, 5/3, 5/4, 6/2, 6/3, 6/4 or 7/2. Moist colors are 10YR 3/3, 3/4, 4/2, 4/3 or 2.5Y 4/2. It is loam, clay loam, sandy clay loam or clay with 5 to 30 percent gravel and 0 to 15 percent cobbles, the total not exceeding 35 percent.

Some pedons have a C horizon.

ELIOAK FAMILY, DEEP

These soils are deep phase members of the clayey, kaolinitic, mesic family of Typic Hapludults. They have developed in material weathered from metasedimentary or metavolcanic rock. They are on broad ridges, benches, and mountainsides at elevations of 500 to about 3,500 feet. Slopes range from 15 to 50 percent. The soils are well to moderately well drained. Mean annual precipitation is about 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near Big Flat, on the Gasquet-Orleans Road (15N01) about 1/4 mile south of the South Fork Bridge; pit is approximately 50 yards uphill from the road on a northeast facing slope of 45 percent under second growth Douglas-fir, redwood, alder and Chinquapin with an understory of tanoak, evergreen huckleberry, swordfern, and snowbrush at 800 feet elevation; in the SW 1/4 of the NE 1/4 of section 23, T. 15 N., R. 2 E., H.B.M.

O-1 inche to 0; fresh and decomposing leaf and needle litter.

A-0 to 8 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/6) moist; weak very fine subangular blocky structure, parting to moderate very fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; medium acid (pH. 5.6); gradual wavy boundary.

BA-8 to 19 inches; yellow (10YR 7/6) gravelly silt loam, yellowish brown (10YR 5/6) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine, few medium and coarse roots; few thin silt coatings on ped faces; 15 percent pebbles; medium acid (pH 5.6); gradual wavy boundary.

Bt1-19 to 30 inches; yellow (10YR 7/6) gravelly silty clay, yellowish brown (10YR 5/6) moist; moderate very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few thin clay films on ped faces and line pores; few fine,

medium, and coarse roots; 15 percent pebbles; medium acid (pH 5.7); gradual wavy boundary.

Bt2-30 to 44 inches; yellow (10YR 7/7) gravelly silty clay, yellowish brown (10YR 5/7) moist; strong very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine, medium and coarse roots; common moderately thick clay films on ped faces; few fine, medium and coarse roots; 25 percent pebbles; medium acid (pH 5.8); gradual wavy boundary.

C-44 to 60 inches; very pale brown (10YR 7/4) very gravelly silt loam, yellowish brown (10YR 5/6) moist; weak very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine, medium and coarse roots; few thin clay films on ped faces and rock fragments; 60 percent pebbles; medium acid (pH 5.8).

Range in Characteristics: The depth to metasedimentary or metavolcanic rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50°F to 59°F. The soil between the depths of about 4 and 12 inches is usually moist in all parts from mid-October through August. The base saturation is 11 to 18 percent at depths greater than 60 inches.

The A horizon has dry color of 10YR 6/4, or 7/4; and moist color of 10YR 5/5, or 6/6. It is loam or silt loam, with 10 to 20 percent clay and 0 to 15 percent gravel. It is slightly to strongly acid.

The Bt horizon has dry color of 7.5YR 6/8, 7/6, or 7/7; and moist color of 7.5YR 4/8, 5/6, 5/8, 10YR 5/6, or 5/8. It is clay loam, silty clay loam, or silty clay with 35 to 50 percent clay and 0 to 25 percent gravel.

The C horizon has dry color of 10YR 7/4 or 2.5Y 8/2; and moist color of 10YR 5/6, or 2.5Y 7/6. It is clay loam or silt loam with 30 to 60 percent gravel. It is slightly or medium acid. It grades to highly fractured metasedimentary or metavolcanic rock.

GASQUET FAMILY, DEEP, STONY

These soils are deep, stony members of the clayey, oxidic, mesic family of Typic Haploxerults. They have developed in material weathered from peridotite. They are on mountainsides at elevations of 500 to 3,500 feet. Slopes range from 10 to 40 percent. These soils are well drained. Mean annual precipitation is 105 inches. Mean annual temperature is 50°F.

Typical Pedon: Located in Del Norte County, California, off the Old Gasquet Toll Road, off an old catroad fireline about 0.2 miles off Toll Road; pit is about 300 yards upslope from catroad, on a southwest facing slope of 25 percent under Douglas-fir, sugar pine, and some incense-cedar, with an understory of tanoak, white leaf manzanita, red and evergreen huckleberry, California coffeeberry, and poison oak at 560 feet elevation; in the NE 1/4 of the SW 1/4 of section 21, T. 17 N., R. 2 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 9 inches; reddish yellow (5YR 6/6) stony loam, reddish brown (5YR 4/3) moist; moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine, many medium and coarse roots; 15 percent stones; medium acid (pH 6.0); clear smooth boundary.

Bt1-9 to 21 inches; red (2.5YR 4/6) stony clay loam, yellowish red (5YR 4/6) moist; weak very fine subangular blocky structure parting to strong very fine granular; slightly hard, firm, sticky and plastic; common moderately thick clayfilms on ped faces and line pores; few very fine, fine, medium and coarse roots; 15 percent stones; slightly acid (pH 6.2); gradual smooth boundary.

Bt2-21 to 42 inches; dark red (2.5YR 3/6) stony clay loam, red (5YR 4/6) moist; moderate very fine subangular blocky structure parting to moderate fine granular; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots;

common moderately thick clay films on ped faces and line pores; 15 percent stones; slightly acid (pH 6.4); gradual smooth boundary.

Bt3-42 to 53 inches; yellowish red (5YR 4/6) stony silty clay loam, reddish brown (5YR 4/4) moist; moderate very fine subangular blocky structure parting to moderate fine granular; hard, firm, sticky and plastic; few fine roots; few moderately thick clay film on ped faces and line pores; 15 percent stones; slightly acid (pH 6.5); clear smooth boundary.

Bt4-53 to 60 inches; strong brown (7.5YR 5/6) stony silty clay loam, strong brown (7.5YR 4/6) moist; weak very fine subangular blocky structure; slightly hard, firm, sticky and plastic; few medium roots; few moderately thick clay films on ped faces and line pores; 15 percent stones; slightly acid (pH 6.4).

Range in Characteristics: The depth to peridotite ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation is about 20 to 30 percent in the argillic horizon. Surface stones range from 5 to 15 percent.

The A horizon has dry color of 5YR 3/4, 5/6, or 6/6; and moist color of 5YR 3/3, 3/4, or 4/4. It has 10 to 20 percent stones or cobbles. It is slightly or medium acid.

The Bt horizon has dry color of 2.5YR 3/4, 3/6, 5YR 3/4, 4/6, or 7.5YR 5/6; and moist color of 5YR 4/4, 4/6, or 7.5YR 4/6. It is clay, clay loam, or silty clay loam, with 35 to 45 percent clay and 5 to 15 percent stones or cobbles. It is neutral or slightly acid.

Additional Data: A grab sample for mineralogy was sent to the Lincoln Laboratory, 1979. Sample No. S79CA015-6. Confirmed oxidic family classification.

GOLDRIDGE FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Typic Haploxerults. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountainsides, broad ridges, and benches at elevations of 600 to 4,800 feet. Slopes range from 5 to 70 percent. These soils are well drained. Mean annual precipitation ranges from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, on Knopki Creek Road about 3.5 miles from state highway 199; approximately 50 feet upslope from road on a southwest facing slope of 45 percent under Douglas-fir, tanoak and madrone, with some canyon live oak, salal, and poison oak at 2,000 feet elevation; in the SE 1/4 of the NW 1/4 of section 23, T. 18 N., R. 4 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 4 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate, fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, few medium roots; 35 percent pebbles; medium acid (pH 5.6); clear smooth boundary.

AB-4 to 14 inches; yellow (10YR 7/6) gravelly clay loam, brown (7.5YR 4/4) moist; weak very fine subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine, many medium, common coarse roots; 15 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

Bt1-14 to 24 inches; light yellowish brown (10YR 6/4) gravelly clay loam, strong brown (7.5YR 5/6) moist; moderate very fine subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine, fine, medium, few coarse roots; few thin clay films on ped faces and line pores; 25 percent pebbles; medium acid (pH 6.0); clear wavy boundary.

Bt2-24 to 30 inches; yellow (10YR 7/6) gravelly clay loam, strong brown (7.5YR 5/6) moist; moderate very fine subangular blocky structure; hard, very firm, sticky and plastic; few very fine and fine, common medium and coarse roots; common moderately thick clay films on ped faces and line pores; 30 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bt3-30 to 43 inches; yellow (10YR 7/8) gravelly clay, reddish yellow (7.5YR 6/6) moist; moderate very fine subangular blocky structure; hard, very firm, very sticky and very plastic; few fine, medium and coarse roots; common moderately thick clay films on ped faces and line pores; 30 percent pebbles; medium acid (pH 6.0); gradual wavy boundary.

R-43 to 59 inches; highly fractured and weathered phyllite; fractures 1 to 4 inches apart.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 40 to over 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation ranges from 11 to 30 percent in the argillic horizon.

The A horizon has dry color of 10YR 4/4, 5/4, 6/3, 6/4, 7/3, 7/4, or 7/6; and moist color of 7.5YR 3/3, 3/4, 4/4, 3/2, 3/3, 4/3, 4/4, or 4/6. It is loam or clay loam with 0 to 45 percent gravel. It is slightly to strongly acid.

The Bt horizon has dry color of 7.5YR 5/8, 6/6, 7/4, 7/6, 10YR 6/4, 6/6, 7/3, 7/4, 7/6, 7/8, or 8/4; and moist color of 7.5YR 4/4, 4/6, 5/4, 5/6, 5/8, 6/6, 6/8, 10YR 5/4, 5/6, or 5/8. It is loam, clay loam or clay. Clay percentages of more than 35 percent occur below the control section. It has 0 to 35 percent gravel.

Some pedons have a C horizon.

HAPLOXERULTS

Haploxerults consist of shallow to deep, well drained soils formed in residual and colluvial material weathered from metasedimentary and metaigneous rocks. They are on mountainsides and ridges at elevations of 2,500 to 4,000 feet. Slopes range from 30 to 70 percent. Annual precipitation is 70 to 100 inches. The mean annual soil temperature is 50 to 59 degrees F. The soils are usually dry from late June to mid-September and is moist the rest of the year.

The A horizon is 1 to 6 inches thick. It has dry color of 10YR 6/1, 6/2, 6/3, 7.5YR 5/4, 4/4, 5YR 6/1, or 6/2; and moist color of 10YR 4/1, 4/2, 4/3, 7.5YR 4/2, 4/4,

5YR 4/1, 4/2, or 4/3. It is loam, gravelly loam, very gravelly loam, or gravelly clay loam and averages 10 to 55 percent gravel.

The Bt horizon is 12 to 54 inches thick. It has dry color of 7.5YR 5/4, 4/4, 5YR 5/3, 5/4, 5/6, 4/3, or 4/4; and moist color of 7.5YR 4/4, 4/3, 5YR 4/3, 4/4, 5/4, or 5/6. It is clay loam, silty clay loam, gravelly clay loam or gravelly clay and averages 10 to 50 percent coarse fragments. The base saturation is 15 to 30 percent.

The vegetation varies from dense Douglas-fir stands to Jeffrey pine - grass cover.

HARTLETON FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Typic Hapludults. They have developed in material weathered from metasedimentary or metaigneous rock. They are on broad ridges and mountainsides at elevations of about 500 to 3,500 feet. Slopes range from 15 to 60 percent. These soils are well drained. Mean annual precipitation is about 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California at the northern end of the Gasquet-Orleans Road, about 0.5 miles south of the South Fork bridge; pit is approximately 250 yards upslope from the road on a northeast facing slope of 60 percent under second growth Douglas-fir and redwood, with tanoak, evergreen huckleberry, rhododendron, and swordfern at 750 feet elevation; in the SW 1/4 of the NE 1/4 of section 23, T. 15 N., R. 2 E., H.B.M.

A-0 to 7 inches; light yellowish brown (10YR 6/4) gravelly silt loam, brown (10YR 4/3) moist; strong very fine granular structure; soft, friable, nonsticky and nonplastic; many very fine, common fine, few medium roots; 10 percent pebbles, 5 percent cobbles; medium acid (pH 5.7); clear wavy boundary.

BA-7 to 15 inches; brownish yellow (10YR 6/6) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; few very fine, common fine, few medium and coarse roots; 15 percent pebbles, 5 percent cobbles; medium acid (pH 5.7); gradual wavy boundary.

Bt1-15 to 21 inches; yellow (10YR 7/6) very gravelly silt loam, strong brown (7.5YR 5/6) moist; moderate very fine subangular blocky structure; slightly hard, very firm, slightly sticky and slightly plastic; few very fine, few fine, few medium and few coarse roots; 30 percent pebbles, 5 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

Bt2-21 to 32 inches; brownish yellow (10YR 6/6) very gravelly silt loam, yellowish brown (10YR 5/6) moist; moderate very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few moderately thick clay films line pores; 55 percent pebbles, 5 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

Bt3-32 to 60 inches; yellow (10YR 7/7) very gravelly silt loam, yellowish brown (10YR 5/6) moist; moderate very fine subangular blocky structure; soft to slightly hard, friable, nonsticky and nonplastic; few fine roots; few thin clay films line pores; 35 percent pebbles; medium acid (pH 5.8).

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually moist throughout from mid-October through August. The base saturation is about 7 to 10 percent in the argillic horizon.

The A horizon has dry color of 5YR 5/6, 10YR 6/4, 6/6, or 7/4; and moist color of 5YR 4/6, 10YR 4/3, 4/4, or 5/5. It is loam or silt loam with 20 to 25 percent clay and 0 to 25 percent gravel. It is slightly to strongly acid.

The Bt horizon has dry color of 5YR 5/8, 6/8, 10YR 6/6, 7/6, or 8/6; and moist color of 5YR 4/6, 4/8, 7.5YR 5/6, 10YR 5/6, 6/6, or 6/8. It is silt loam, clay loam or silty clay loam with 25 to 35 percent clay. It has 20 to 55 percent gravel and 0 to 30 percent cobbles. Total rock fragments exceed 35 percent. It is slightly or medium acid.

Some pedons have a C horizon.

HECKER FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Mollic Haploxeralfs. They have developed in material weathered from sandstone and shale. They are on mountainsides and ridges at elevations of 1,000 to 4,800 feet. Slopes range from 25 to 70 percent. The soils are well drained. Mean annual precipitation is about 60 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, near Blake Mountain on the road between Forest Service roads 2N12 and 1N15, about 1 mile off 2N12 on a south facing slope of 55 percent under white and black oaks at 3,750 feet elevation in the SW 1/4 of the SE 1/4 of section 25, T. 2 N., R. 5 E., H.B.M.

A1-0 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, sticky and plastic; many very fine and coarse roots; 15 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

A2-6 to 13 inches; light brownish gray (10YR 6/2) very gravelly light clay loam, dark brown (7.5YR 3/2) moist; moderate subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and coarse roots; 40 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

Bt1-13 to 23 inches; light brownish gray (10YR 6/2) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; many very

fine and coarse roots; few thin clay films on ped faces and line pores; 40 percent pebbles, 5 percent cobbles; neutral (pH 6.7); clear wavy boundary.

Bt2-23 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; common very fine and coarse roots; few thin clay films on ped faces and line pores; 55 percent pebbles, 15 percent cobbles; neutral (pH 6.8).

Range in Characteristics: Depth to sandstone or shale ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-July through mid-October and moist throughout between November and April. The base saturation is 80 to 90 percent in the epipedon and in the upper 75 cm of the argillic horizon. Organic carbon is assumed to be more than 0.7 percent.

The A horizon has dry color of 10YR 6/2, 6/3, or 6/4; and moist color of 7.5YR 3/2, 10YR 3/2, 3/3, or 3/4. It is loam or light clay loam with 5 to 50 percent gravel. It is neutral to medium acid.

The Bt horizon has dry color of 10YR 5/2, 6/2, 6/4, or 7/4; and moist color of 10YR 3/2, 4/2, 4/3, 4/4, 5/2, or 5/4. It has at least 5 to 10 percent more clay than the horizon above. The average clay content of the upper part of the argillic is less than 35 percent. It has 35 to 55 percent gravel, and 5 to 20 percent cobbles or stones.

HOLLAND FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from sedimentary, metasedimentary and metaigneous rock on mountainsides, benches and broad ridges at elevations of 600 to 4,800 feet. Slopes range from 5 to 70 percent. These soils are moderately well to well drained. Mean annual precipitation ranges from about 50 to 90 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, off the Salyer-Mad River Road (Forest Service road 6N06) on a logging spur that is about 3.5 miles from Friday Ridge Road; roadcut is about 0.75 miles up the spur road on a northwest facing slope of 55 percent under Douglas-fir, tanoak and madrone at 1,700 feet elevation; in the SW 1/4 of the SW 1/4 of section 27, T. 6 N., R. 5 E., H.B.M.

A-0 to 6 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate medium granular structure; slightly hard, friable, sticky and plastic; common very fine and fine, many medium and coarse roots; 40 percent pebbles; strongly acid (pH 5.5); clear smooth boundary.

Bt1-6 to 20 inches; strong brown (7.5YR 5/6) gravelly loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and coarse roots; few thin clay films on ped faces; 15 percent pebbles; strongly acid (pH 5.4); clear smooth boundary.

Bt2-20 to 46 inches; strong brown (7.5YR 5/6) gravelly loam, dark brown (7.5YR 4/4) moist; strong medium subangular blocky structure; hard, friable, sticky and plastic; common thin clay films on ped faces; common medium and coarse roots; strongly acid (pH 5.4); clear wavy boundary.

Bt3-46 to 57 inches; reddish yellow (7.5YR 6/6) very gravelly loam, dark yellowish brown (10YR 4/4)

moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few medium and coarse roots; common thin clay films on ped faces; 40 percent pebbles, 10 percent cobbles; strongly acid (pH 5.4); clear wavy boundary.

C-57 to 65 inches; reddish yellow (7.5YR 6/6) very gravelly loam, brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few medium and coarse roots; 60 percent pebbles; medium acid (pH 5.8).

Range in Characteristics: The depth to sedimentary, metasedimentary or metaigneous rock ranges from 40 to over 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation ranges from about 40 to 60 percent in the upper 75 cm of the argillic horizon.

The A horizon has dry color of 7.5YR 5/6, 6/6, 10YR 5/3, or 6/3; and moist color of 7.5YR 3/4, 4/4, 4/6, 10YR 4/3, or 4/4. It is loam or silt loam with 15 to 25 percent clay and 5 to 40 percent gravel. It is neutral to strongly acid.

The Bt horizon has dry color of 7.5YR 5/4, 5/6, 5/8, 6/6, 10YR 6/6, or 6/8; and moist color of 7.5YR 4/4, 5/6, 5/8, 10YR 4/4, 4/6, or 5/8. It is loam, clay loam, or silty clay loam with 20 to 35 percent clay, 5 to 40 percent gravel, and 0 to 10 percent cobbles. It is slightly to very strongly acid.

Some pedons lack a C horizon.

Note: A dry phase of this soil was named as a mapping unit component. It is morphologically the same, but is located only on southerly aspects.

HOLLAND FAMILY, DEEP, DIORITIC

These soils are deep, dioritic phase members of the fine-loamy, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from quartz diorite. They are on mountainsides at elevations of 600 to 4,800 feet. Slopes range from 25 to 50 percent. These soils are well drained. Mean annual precipitation varies from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near Zeigler Point, on Forest Service road 7N04, in the roadcut on a south facing slope of 50 percent under Douglas-fir, tanoak, and madrone at 3,700 feet elevation; in the NE 1/4 of the NE 1/4 of section 4, T. 6 N., R. 6 E., H.B.M.

01-1.5-1 inch; scattered loose twigs and leaves.

02-1 to 0 inch; partly decomposed humus.

A1-0 to 4 inches; brown (10YR 5/3) loam, dark brown (7.5YR 3/2) moist; strong medium granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; slightly acid (pH 6.5); clear wavy boundary.

A2-4 to 10 inches; strong brown (7.5YR 5/6) loam, dark reddish brown (5YR 3/4) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine, few coarse roots; slightly acid (pH 6.2); clear wavy boundary.

Bt1-10 to 23 inches; brown (7.5YR 5/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common moderately thick clay films on ped faces and line pores; common very fine and fine, few coarse roots; medium acid (pH 6.0); gradual wavy boundary.

Bt2-23 to 44 inches; brown (7.5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and plastic; common moderately thick clay films on ped faces and line pores; few very fine and fine, common coarse roots; medium acid (pH 6.0); gradual wavy boundary.

Bt3-44 to 68 inches; reddish yellow (7.5YR 6/6) sandy clay loam, strong brown (7.5YR 5/6) moist; weak fine and medium subangular blocky structure; soft, very friable, sticky and plastic; few very fine and fine, common medium coarse roots; strongly acid (pH 5.5).

Range in Characteristics: The depth to diorite ranges from 40 to over 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation is estimated to be 30 to 50 percent in the upper 75 cm of the argillic horizon.

The A horizon has dry color of 7.5YR 5/4, 5/6, 10YR 6/2, or 6/6; and moist color of 5YR 4/4, 7.5YR 3/2, 4/6, or 10YR 3/2. Where colors are dark the horizon is too thin to be umbric. It has 0 to 40 percent gravel. It is slightly or medium acid.

The Bt horizon has dry color of 7.5YR 5/4, 5/6, 10YR 7/3, or 7/6; and moist color of 5YR 4/4, 4/6, 7.5YR 4/6, 10YR 5/4, or 5/8. It is clay loam or sandy clay loam with 0 to 30 percent gravel. Clay content decreases with depth.

Some pedons have a C horizon.

HOLLAND FAMILY, DEEP, GABBROIC

These soils are deep, gabbroic phase members of the fine-loamy, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from basic igneous rock. They are on mountainsides at elevations of 1,000 to 3,500 feet. Slopes range from 20 to 40 percent. These soils are well drained. Mean annual precipitation ranges from 90 to 110 inches. Mean annual temperature is about 49°F.

Typical Pedon: Located on Del Norte County, California, near Baker Flat, off Forest Service road 18N14, about 1 mile north of junction with 18N17; pit is about 25 yards below the road on a northeast facing slope of 35 percent under a brush cover of tanoak, rhododendron, salal, and chinquapin, with some Sadler oak and manzanita, and a few sugar pine and Douglas-fir at 3,100 feet elevation; in the SW 1/4 of the NW 1/4 of section 12, T. 18 N., R. 3 E., H.B.M.

O-1 inch to 0; fresh and decomposing leaf litter.

A-0 to 3 inches; strong brown (7.5YR 5/6) loam, brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine, few coarse roots; strongly acid (pH 5.4); clear smooth boundary.

Bt1-3 to 10 inches; yellowish brown (10YR 5/6) clay loam, strong brown (7.5YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few moderately thick clay films on ped faces and line pores; strongly acid (pH 4.5); clear smooth boundary.

BC-10 to 23 inches; brownish yellow (10YR 6/6) gravelly loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine, medium and coarse roots; 30 percent pebbles; medium

acid (pH 5.6); gradual smooth boundary.

C1-23 to 50 inches; very pale brown (10YR 7/4) gravelly loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; 25 percent pebbles; strongly acid (pH 5.2); gradual smooth boundary.

C2-50 to 60 inches; very pale brown (10YR 8/4) sandy loam, yellowish brown (10YR 5/6) moist; massive; soft, friable, nonsticky and slightly plastic; strongly acid (pH 5.2).

Range in Characteristics: The depth to gabbro ranges from 40 to more than 60 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation is about 20 to 40 percent in the upper 75 cm of the argillic horizon.

The A horizon has dry color of 5YR 4/8, 7.5YR 5/6, or 10YR 4/6; and moist color of 5YR 4/6, 7.5YR 4/4, 4/6, 10YR 3/3, or 5/4. Where colors are dark the horizon is too thin to be umbric. It has 5 to 35 percent gravel. It is medium or strongly acid.

The Bt horizon has dry color of 5YR 4/6, 4/8, 7.5YR 6/6, 10YR 5/6, or 6/6; and moist color of 5YR 3/4, 4/6, 7.5YR 4/4, 4/6, 5/6, 10YR 4/4, or 6/6. It is loam or clay loam with at least a 5 to 10 percent clay increase over the above horizon. It has 5 to 30 percent gravel. It is slightly to strongly acid.

The C horizon has dry color of 5YR 4/8, 7.5YR 6/6, 10YR 7/4, or 8/4; and moist color of 2.5YR 3/6, 7.5YR 4/6, or 10YR 5/6. It is loam or sandy loam with 0 to 15 percent gravel.

HOLLAND FAMILY, DEEP, STONY

These soils are deep, stony phase members of the fine-loamy, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from metaigneous colluvium. They are on mountainsides at elevations of 3,000 to 4,500 feet. Slopes range from 25 to 50 percent. These soils are well drained. Mean annual precipitation ranges from 100 to 110 inches. Mean annual temperature is about 49°F.

Typical Pedon: Located in Del Norte County, California, near Broken Rib Mountain; on a spur road about 0.25 miles from its junction with Forest Service road 18N07 about 3.5 miles east of Sanger Lake; pit is about 25 feet upslope from road on a southwest facing slope of 25 percent under a brush cover of predominantly live oak with some California bay laurel, manzanita, and a few Douglas-fir, incense-cedar and sugar pine at 3,440 feet elevation; in the NW 1/4 of the NE 1/4 of Section 6, T. 17 N., R. 5 E., H.B.M.

0-2 inches to 0; fresh and decomposing leaf and needle litter.

A-0 to 9 inches; yellowish brown (10YR 4/6) very stony loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine, common medium, few coarse roots; 30 percent pebbles, 5 percent cobbles and 5 percent stones; acid (pH 6.2); clear smooth boundary.

Bt1-9 to 23 inches; brownish yellow (10YR 6/6) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, many fine, common medium, few coarse roots; few thin clay films line pores; 10 percent pebbles, and 5 percent cobbles;

slightly acid (pH 6.3); clear smooth boundary.

Bt2-23 to 44 inches; strong brown (7.5YR 5/8) clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine, fine, medium and coarse roots; common thin clay films on ped faces and line pores; 10 percent cobbles and stones; slightly acid (pH 6/4); abrupt wavy boundary.

C-44 inches; colluvial metaigneous rock, 90 to 100 percent gravel.

Range in Characteristics: Depth to metaigneous colluvium ranges from 40 to more than 60 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation is about 40 to 60 percent in the upper 75 cm of the argillic horizon. Surface rock fragments range from 10 to 20 percent.

The A horizon has dry color of 5YR 4/8, 7.5YR 5/6, 7/8, 10YR 5/6, or 6/6; and moist color of 5YR 4/6, 7.5YR 4/4, 4/6, 10YR 3/4, 4/3, or 5/4. It has 5 to 35 percent gravel and 10 to 20 percent cobbles or stones. It is neutral or slightly acid.

The Bt horizon has dry color of 5YR 4/6, 4/8, 7.5YR 5/8, 6/6, 10YR 5/6, or 6/6; and moist color of 5YR 3/4, 4/6, 7.5YR 4/4, 4/6, 5/6, 10YR 4/4, or 4/6. It has 10 to 30 percent gravel and 5 to 10 percent cobbles or stones. Total amount of rock fragments is 15 to 35 percent in the upper part of horizon. It is slightly or medium acid.

Some pedons have a C horizon.

HOLYOKE FAMILY

These soils are members of the loamy, mixed, mesic family of Lithic Dystrachrepts. They have developed in material weathered from metasedimentary rock. They are on narrow ridges and mountainsides at elevations of 500 to 3,500 feet. Slopes range from 50 to 80 percent. These soils are well drained. Mean annual precipitation is about 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, on the Goose Creek Road about 5.5 miles from the Cache Saddle junction, in a roadcut on a west facing slope of 70 percent under tanoak, madrone, Douglas-fir, and redwood with some snowbrush at 2,250 feet elevation; in the NE 1/2 of the SE 1/4 of section 14, T. 14 N., R. 2 E., H.B.M.

0-1/2 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 6 inches; yellowish brown (10YR 5/4) gravelly silt loam, dark brown (10YR 4/3) moist; weak very fine granular structure; loose, very friable, nonsticky and nonplastic; many very fine, fine, and medium, common coarse roots; 15 percent pebbles; strongly acid (pH 5.5); clear wavy boundary.

Bw-6 to 14 inches; light yellowish brown (10YR 6/4) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky struc-

ture; slightly hard, friable, slightly sticky and slightly plastic; common coarse roots; 15 percent pebbles; strongly acid (pH 5.4); clear wavy boundary.

BC-14 to 19 inches; light gray (2/5Y 7/2) gravelly silt loam, light olive brown (2.5Y 5/4) moist; strong very fine sub-angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine and medium roots; 25 percent pebbles; medium acid (pH 5.6).

R-19 inches; highly fractured phyllite bedrock; fractures 2 to 4 inches apart.

Range in Characteristics: Depth to metasedimentary rock ranges from 10 to 20 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually moist in all parts from mid-October through August. The base saturation just above a lithic contact is 5 to 20 percent.

The A horizon has dry color of 10YR 4/2, 5/4, or 6/4; and moist color of 10YR 3/3, or 4/3. Where colors are dark the horizon is too thin to be mollic or umbric. It is loam or silt loam with 5 to 20 percent gravel. It is medium or strongly acid.

The Bw horizon has dry color of 10YR 6/4, 6/5, or 6/6; and moist color of 10YR 4/3, 4/4, or 5/4. It has 5 to 30 percent gravel.

HORSESHOE FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Xeric Haplohumults. They have developed in material weathered from mixed alluvium. They are on old terrace remnants at elevations of about 500 to 2,000 feet. Slopes range from 10 to 40 percent. These soils are well to moderately well drained. Mean annual precipitation ranges from 80 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, on Forest Service road 15N01 approximately 0.25 miles west of Sims Gulch on a west facing slope of 10 percent under Douglas-fir, tanoak and madrone at 1,500 feet elevation; in the SE 1/4 of the NE 1/4 of section 25, T. 11 N., R. 5 E., H.B.M.

0-1 inch to 0; partially decomposed forest litter.

A-0 to 6 inches; yellowish red (5YR 5/6) gravelly loam, reddish brown (5YR 4/3) moist; moderate very fine subangular blocky structure; slightly hard, friable, nonsticky and non-plastic; few very fine, common medium, and few coarse roots; 15 percent pebbles, 10 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

BA-6 to 13 inches; yellowish red (5YR 5/8) gravelly loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine, medium and coarse roots; 15 percent pebbles, 10 percent cobbles; medium acid (pH 5.7); clear, smooth boundary.

Bt1-13 to 22 inches; red (2.5YR 5/8) gravelly clay loam, dark red (2.5YR 3/6) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; few fine, common coarse roots; many thin clay films line pores; 15 percent pebbles, 10 percent cobbles; strongly acid (pH 5.3); clear wavy boundary.

Bt2-22 to 36 inches; red (2.5YR 5/8) gravelly clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few coarse roots; many moderately thick clay films on ped faces and line pores; 15 percent pebbles, 10 percent cobbles; very strongly acid (pH 5.0); clear smooth boundary.

Bt3-36 to 48 inches; red (2.5YR 4/8) gravelly clay loam, dark red (2.5YR 3/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common fine, few medium roots; many

moderately thick clay films on ped faces and line pores; 15 percent pebbles, 10 percent cobbles; very strongly acid (pH 5.0); clear smooth boundary.

BCt-48 to 62 inches; reddish yellow (7.5YR 6/8) very cobbly clay loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine, few medium and coarse roots; common moderately thick clay films on ped faces and line pores; 20 percent pebbles, 20 percent cobbles; strongly acid (pH 5.2); clear, smooth boundary.

C-62 to 76 inches; light gray (10YR 7/2) gravelly loam with some reddish yellow (7.5YR 6/8) staining; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; 15 percent pebbles, 10 percent cobbles; very strongly acid (pH 5.0).

Range in Characteristics: This soil is over 60 inches deep. The depth of the solum to mixed alluvium ranges from 40 to more than 60 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from July through October and moist throughout between November and April. The base saturation of similar soils is 15 to 30 percent in the argillic horizon or at depths below 60 inches. Surface rock fragments range from 0 to 10 percent.

The A horizon has dry color of 5YR 4/4, 5/6, 7.5YR 4/4, 5/6, or 6/4; and moist color of 5YR 4/3, 4/6, 7.5YR 4/4, or 4/6. It is loam or clay loam with 10 to 30 percent gravel and 0 to 15 percent cobbles. It is slightly to strongly acid.

The Bt horizon has dry color of 2.5YR 4/6, 4/8, 5/8, 5YR 4/6, 4/8, 5/8, 7.5YR 5/4, 5/5, 5/6, 5/8, or 6/4; and moist color of 2.5YR 3/6, 4/6, 5YR 4/4, 5/6, 5/8, 7.5YR 4/4, 4/6, or 5/6. It is clay loam or clay with 5 to 30 percent gravel and 5 to 15 percent cobbles. It has at least 10 to 15 percent more clay than the above horizon. The upper part of the Bt horizon averages 27 to 35 percent clay and has 15 to 35 percent rock fragments. It is slightly to very strongly acid.

The C horizon has dry color of 5YR 4/6, 5/8, 10YR 7/2, or 7/4; and moist color of 5YR 5/6, 10YR 7/2, or 7/4. It is loam, silt loam or clay loam with 0 to 30 percent gravel and 0 to 10 percent cobbles. It is strongly or very strongly acid.

HUGO FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from metasedimentary and metaigneous rock. They are on mountainsides and ridges at elevations of 400 to 4,500 feet. Slopes range from 25 to 65 percent. These soils are well drained. Mean annual precipitation varies from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, east of Little Jones Creek, off Forest Service road 17N05 on a spur road that intersects 17N05 about 2 miles north of the Higgins Peak junction; the roadcut is 0.2 miles in on the spur road on an east facing slope of 40 percent under Douglas-fir, tanoak, madrone, chinquapin, and salal at 3,450 feet elevation; in the NW 1/4 of the SE 1/4 of section 24, T. 17 N., R. 3 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 7 inches; light yellowish brown (10YR 6/4) gravelly loam, brown (10YR 4/3) moist; weak very fine to fine granular structure; soft, friable, non-sticky and non-plastic; many very fine, few fine and medium roots; 15 percent pebbles; medium acid (pH 5.6); clear smooth boundary.

Bw1-7 to 15 inches; bBrownish yellow (10YR 6/6) silt loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, firm, nonsticky and slightly plastic; few very fine and fine, common medium, few coarse roots; medium acid (pH 5.6); diffuse wavy boundary.

Bw2-15 to 29 inches; yellow (10YR 7/6) silt loam, yellowish brown (10YR 5/8) moist; moderate very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine, few fine, medium, and coarse roots; medium acid (pH 5.6); diffuse wavy boundary.

Bw3-29 to 40 inches; yellow (10YR 7/6) gravelly silty clay loam, yellowish brown (10YR 5/8) moist; weak very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine, fine and medium roots; 20 percent pebbles; medium acid (pH 5.6); gradual wavy boundary.

BC-40 to 60 inches; brownish yellow (10YR 6/6) extremely gravelly silt loam, yellowish brown (10YR 5/6) moist; weak very friable subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine and medium roots; 65 percent pebbles; medium acid (pH 5.7).

Range in Characteristics: Depth to metasedimentary or metaigneous rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June through mid-October and moist throughout between November and April. The base saturation is 10 to 30 percent between the depths of 10 and 30 inches. Surface rock fragments range from 0 to 10 percent.

The A horizon has dry color of 10YR 5/4, 6/4, 7/4, 2.5Y 7/2, or 8/6; and moist color of 10YR 3/3, 4/3, 4/4, 5/4, 6/6, or 2.5Y 4/4. Where colors are dark, the horizon is too thin to be umbric. It has 5 to 35 percent gravel. It is slightly to strongly acid.

The Bw horizon has dry color of 10YR 6/4, 6/6, 7/3, 7/6, 8/6, 2.5Y 7/4, or 8/4; and moist color of 10YR 5/4, 5/6, 5/8, 6/7, 2.5Y 5/4, or 6/6. It is loam, silt loam, or clay loam, not increasing by as much as 1.2 percent clay over the horizon above. It has 5 to 35 percent gravel.

Some pedons have a C horizon.

Note: A dry phase of this soil was named as a mapping unit component. It is morphologically the same, but is located only on southerly aspects.

HUGO FAMILY, DEEP, DIORITIC

These soils are deep, dioritic phase members of the fine-loamy, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from diorite. They are on mountainsides at elevations of 600 to 4,800 feet. Slopes range from 15 to 45 percent. Mean annual precipitation is about 70 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, west of north Trinity Mountain on Forest Service road 10N02, about 1.5 miles north of the junction with the spur road, in a roadcut on a southwest facing slope of 30 percent under Douglas-fir, tanoak, and madrone with a few white fir at 4,600 feet elevation; in the NE 1/4 of the NE 1/4 of section 6, T. 8 N., R. 6 E., H.B.M.

A-0 to 3 inches; reddish brown (5YR 4/3) gravelly loam, dark reddish brown (5YR 2/2) moist; strong very fine and fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt smooth boundary.

BA-3 to 8 inches; reddish brown (5YR 5/4) gravelly loam, reddish brown (5YR 4/4) moist; moderate very fine and fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine, few medium roots; 15 percent pebbles; medium acid (pH 6.0); abrupt wavy boundary.

Bw-8 to 19 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few medium roots; medium acid (pH 5.7); clear wavy boundary.

BC-19 to 39 inches; light brown (7.5YR 6/4) loam, strong brown (7.5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few

medium roots; medium acid (pH 5.7); clear wavy boundary.

C-39 to 51 inches; brownish yellow (10YR 6/6) sandy loam, yellowish brown (10YR 5/6) moist; massive; soft, friable, nonsticky and slightly plastic; strongly acid (pH 5.5).

Cr-51 inches; highly decomposed diorite.

Range in Characteristics: Depth to diorite rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 47 to 49°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June through mid-October and moist throughout between November and April. The base saturation is estimated to be 30 to 40 percent between the depths of 10 and 30 inches. Surface rock fragments range from 0 to 15 percent.

The A horizon has dry color of 5YR 4/3, 7.5YR 5/4, or 4/4; and moist color of 5YR 2/2, 3/2, 4/4, 7.5YR 3/4, or 4/4. Where colors are dark the horizon is too thin to be umbric. It is loam or sandy loam with 10 to 20 percent gravel and 0 to 10 percent cobbles or stones. It is medium or strongly acid.

The Bw horizon is 5YR 5/4, 5/6, 7.5YR 5/4, or 6/4; and moist color of 5YR 4/4, 4/6, 7.5YR 4/4, or 5/6. It has 0 to 30 percent gravel and 0 to 10 percent cobbles or stones. It is slightly or medium acid.

The C horizon has dry color of 7.5YR 5/8, or 10YR 6/6; and moist color of 7.5YR 5/6, or 10YR 5/6. It is loamy sand or sandy loam with 0 to 40 percent gravel and 0 to 15 percent cobbles or stones. It is strongly acid.

HUGO FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the fine-loamy, mixed, mesic family of Dystric Xerochrepts. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountainsides at elevations of 400 and 4,500 feet. Slopes range from 30 to 70 percent. These soils are well drained. Mean annual precipitation ranges from 50 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, near Mud Springs, on Cedar Camp Road (Forest Service road 11N05) on an east facing slope of 60 percent under Douglas-fir, some white fir and tanoak at 4,200 feet elevation; in section 13, T. 11 N., R. 4 E., H.B.M.

0-1/2 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 7 inches; pale brown (10YR 6/3) gravelly loam, light yellowish brown (10YR 6/4) moist; strong medium granular structure; soft, firm, nonsticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 5.5); clear smooth boundary.

BA-7 to 12 inches; very pale brown (10YR 7/3) gravelly loam, light brownish gray (2.5Y 6/2) moist; weak fine subangular blocky structure; soft, friable, nonsticky and non-plastic; many fine and medium roots; 15 percent pebbles; strongly acid (pH 5.3); clear smooth boundary.

Bw-12 to 18 inches; very pale brown (10YR 7/3) gravelly loam, very pale brown (10YR 7/4) moist; moderate fine granular structure; slightly hard, friable, sticky and slightly plastic; common medium, few coarse roots; 15 percent pebbles; strongly acid (pH 5.3); clear wavy boundary.

C-18 to 24 inches; light gray (10YR 7/1) gravelly loam, light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; 15 percent pebbles; very strongly acid (pH 4.8); abrupt irregular boundary.

R-24 inches; fractured metasedimentary rock.

Range in Characteristics: Depth to metasedimentary or metaigneous rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-July to mid-October and moist throughout from November to April. The base saturation is 10 to 30 percent between the depths of 10 and 30 inches. Surface rock fragments range from 0 to 10 percent.

The A horizon has dry color of 10YR 5/3, 5/4, 6/3, or 6/4; and moist color of 10YR 3/3, 3/4, 5/4, or 6/4. Where colors are dark the horizon is too thin to be umbric. It has 10 to 35 percent gravel. It is medium or strongly acid.

The Bw horizon has dry color of 10YR 5/4, 6/4, 7/3, or 8/4; and moist color of 10YR 4/4, 5/4, or 7/4. It has 10 to 30 percent gravel.

The C horizon has dry color of 10YR 7/1, 7/2, or 7/3; and moist color of 10YR 4/4, 5/6, 6/3, 6/4, 2.5Y 5/2, 6/4, or 7/4. It has 15 to 40 percent gravel. It is strongly or very strongly acid.

Some pedons lack C horizons.

HULLT FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Typic Xerumbrepts. They have developed in place from metasedimentary rock. They are on mountainsides and ridges at elevations of 3,000 to 4,000 feet. Slopes range from 35 to 70 percent. These soils are well drained. Mean annual precipitation is about 70 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, near Sugarloaf Mountain, about 0.5 miles off Forest Service road 6N06, on a logging spur that curves around the west side of Sugarloaf, on a northwest facing slope of 60 percent under Douglas-fir, tanoak, and madrone at 3,400 feet elevation; in the NW 1/4 of the NE 1/4 of Section 33, T. 5 N., R. 5 E., H.B.M.

0-2 inches to 0; fresh and decomposing leaf and needle litter.

A1-0 to 2 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, few coarse roots; 30 percent pebbles; strongly acid (pH 5.5); clear smooth boundary.

A2-2 to 14 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and coarse roots; 20 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bw1-14 to 24 inches; light yellowish brown (10YR 6/4) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly

sticky and slightly plastic; common fine, few coarse roots; 25 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bw2-24 to 45 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; slightly acid (pH 6.2); clear smooth boundary.

R-45 inches; weathered and fractured phyllite; fractures 4 to 6 inches apart.

Range in Characteristics: Depth to metasedimentary rock ranges from 40 to over 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-July through mid-October and moist throughout between November and April. The base saturation in the upper portion of the soil is estimated to be 30 to 40 percent.

The A horizon has dry color of 10YR 2/2, 4/3, 5/2, 5/3, or 5/4; and moist color of 10YR 2/1, 3/2, or 3/3. It has 10 to 30 percent gravel. It is medium or strongly acid.

The Bw horizon has dry color of 10YR 5/4, 6/2, 6/3, or 6/4; and moist color of 10YR 3/2, 3/4, 4/3, or 5/4. It is loam or clay loam and does not increase in clay content by as much as 1.2 times that of the above horizon. It has 10 to 25 percent gravel. It is slightly or medium acid.

Note: A dry phase of this soil was named as a mapping unit component. It is morphologically the same, but is located only on southerly aspects.

HUNGRY FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, serpentinitic, frigid family of Typic Xerochrepts. These soils have developed in place from serpentine rock. They are on mountainsides at elevations of 4,000 to 6,000 feet. Slopes range from 35 to 70 percent. These soils are well drained. Mean annual precipitation is about 75 inches. The mean annual temperature is about 52°F.

Typical Pedon: Located in Humboldt County, California, near Friday Camp on Titlow Hill Road, about 2.4 miles from junction with Friday Ridge road on an east facing slope of 60 percent under sugar pine, ponderosa pine, and incense-cedar at 4,200 feet elevation; in the SW 1/4 of the SW 1/4 of section 2, T. 5 N, R. 4 E., H.B.M.

0-1.5 inch to 0; Fresh and decomposing needle litter.

A-0 to 7 inches; light brown (7.5YR 6/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and plastic; many very fine, common fine, few medium roots; 50 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

BA-7 to 16 inches; light brown (7.5YR 6/4) clay loam; dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure breaking to moderate fine granular; slightly hard, friable, sticky and plastic; few very fine, fine, medium, and coarse roots; medium acid (pH 5.6); clear wavy boundary.

Bw-16 to 30 inches; pink (5YR 7/4) extremely cobbly clay loam, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine, few medium and coarse roots; 20 percent pebbles, 50 percent cobbles; medium acid (pH 5.7); clear wavy boundary.

C-30 to 53 inches; very pale brown (10YR 7/4) very cobbly clay loam; dark yellowish brown (10YR 4/6) moist; weak very fine subangular blocky structure;

slightly hard, friable, sticky and plastic; few fine and medium roots; 15 percent pebbles, 30 percent cobbles, 10 percent stones; medium acid (pH 5.7).

R-53 inches; weathered serpentine.

Range in Characteristics: Depth to serpentine rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 43° to 47°F. Mean summer soil temperature is estimated to be 48°F to 50°F and the difference between mean summer and mean winter temperatures is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation, by Hach kit, is about 50 to 55 percent at about 30 cm.

The A horizon has dry color of 7.5YR 6/2, 6/4, 10YR 6/3, 7/3, or 2.5Y 6/2; and moist color of 5YR 3/4, 7.5YR 4/4, 10YR 3/2, 3/3, 3/4, 2.5YR 3/2, or 4/4. It is loam or clay loam with 25 to 32 percent clay and 15 to 50 percent gravel. It is slightly or medium acid.

The Bw horizon has dry color of 5YR 4/6, 7/4, 7.5YR 5/6, 6/6, or 2.5Y 7/2; and moist color of 5YR 3/4, 4/6, or 2.5Y 5/4. It is clay loam or silty clay loam with 28 to 35 percent clay, not increasing as much as 1.2 times more clay than the horizon above. It has 10 to 45 percent gravel and 10 to 40 percent cobbles with a weighted average of at least 35 percent rock fragments in the 10 to 40 inch control section.

The C horizon has dry color of 7.5YR 5/6, 6/6, 10YR 6/4, 7/4, 2.5Y 6/1, 6/2, or 6/4; and moist color of 7.5YR 4/4, 10YR 3/3, 4/6, 2.5Y 4/3, or 4/4. It has 15 to 50 percent gravel, 10 to 30 percent cobbles, and 0 to 10 percent stones.

Additional Data: A reference sample for mineralogy was sent to the Lincoln Laboratory, 1979; sample No. S79CA023-5.

ISHI PISHI FAMILY, DEEP

These soils are deep phase members of the clayey-skeletal, serpentinitic, mesic family of Ultic Haploxeralfs. They have developed in material weathered from serpentinite rock. Slopes range from 30 to 70 percent. They are on mountain sideslopes at elevations of 400 to 3,000 feet. These soils are well drained. Mean annual precipitation varies from 70 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California near Black Mountain, on Black Mountain Road about 1/4 mile east of junction with Forest Service road 10N01; pit is approximately 60 feet north of the road on a southeast facing slope of 35 percent under Douglas-fir, Jeffrey pine, sugar pine, madrone, incense-cedar with an understory of tanoak, California coffeeberry and grasses at 2,100 feet elevation; in section 31, T. 10 N., R. 6 E., H.B.M.

0-1 inch to 0; fresh and decomposing needle and leaf litter.

A-0 to 2 inches; brown to dark brown (7.5YR 4/4) gravelly clay loam, dark brown (7.5YR 3/2) moist; strong medium and coarse granular structure; slightly hard, friable, slightly sticky and plastic; common fine, medium, and coarse roots; many very fine, fine, common medium tubular pores; few thin clay films on ped faces; 15 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

BA-2 to 8 inches; reddish yellow (5YR 6/6) gravelly clay, reddish brown (5YR 4/4) moist; weak very coarse subangular blocky parting to moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common fine, medium, and coarse roots; common medium and fine tubular pores; few thin clay films on ped faces; 15 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

Bt1-8 to 16 inches; red (2.5YR 5/6) gravelly clay, dark reddish brown (2.5YR 3/4) moist; moderate fine and medium subangular blocky parting to moderate fine granular structure; slightly hard, friable, sticky and plastic; few thin, common medium and coarse roots; many very fine, common fine tubular pores; many thin clay films on ped faces; 15 percent pebbles, 5 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

Bt2-16 to 25 inches; yellowish red (5YR 5/6) very stoney

clay, reddish brown (5YR 5/5) moist; moderate fine and medium sub-angular blocky parting to moderate fine granular structure; slightly hard, friable, very sticky and plastic; few fine, common medium, and coarse roots; many very fine and common fine tubular pores; continuous thin clay films on ped faces; 20 percent pebbles, 20 percent cobbles, 15 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt3-25 to 33 inches; yellowish red (5YR 5/6) very gravelly clay, dark reddish brown (5YR 3/4) moist; moderate very fine, fine, and medium subangular blocky structure; slightly hard, friable, very sticky and plastic; few fine, common medium and coarse roots; common very fine and fine tubular pores; continuous moderately thick clay films on ped faces; 35 percent pebbles, 3 percent cobbles, 15 percent stones; neutral (pH 7.0); gradual wavy boundary.

Bt4-33 to 40 inches; yellowish red (5YR 5/6) very gravelly clay, dark reddish brown (5YR 3/3) moist; moderate fine, medium, and coarse subangular blocky structure; slightly hard, friable, very sticky and very plastic; few fine, common medium and coarse roots; continuous moderately thick clay films on ped faces; 35 percent pebbles, 3 percent cobbles; neutral (pH 7.0); gradual irregular boundary.

C-40 to 47 inches; white (5YR 5/6) saprolite that crushes to gravelly clay loam, light gray (2.5Y 7/2) moist; weak coarse and very coarse subangular blocky structure; slightly hard, friable, very sticky and plastic; few very fine, fine, and medium roots; few very fine tubular pores; many moderately thick clay films on ped faces; 35 percent pebbles; neutral (pH 7.3); clear irregular boundary.

R-47 inches; ultramafic rock (Serpentinite).

Range in Characteristics: The depth to serpentinite ranges from 40 to 60 inches. The mean annual soil temperature is 47 to 52°F. The soil between the depths of 8 and 25 inches is usually dry in all parts between June and October, and are moist throughout from November to April. The base saturation is estimated to be 50 to 60 percent in the argillic horizon. It is assumed that more than 40 percent by weight of the whole soil <2 mm diameter is serpentine minerals.

The A horizon is 7.5YR 6/4, 7/4, 5YR 4/6, or 5/6. Moist

colors are 7.5YR 3/2, 4/4, 5YR 3/3, 3/4, or 4/4. It is loam to clay loam with 15 to 35 percent gravel and 0 to 10 percent cobbles. It is slightly or medium acid.

The Bt horizon is 7.5YR 6/4, 5YR 4/4, 5/6, 6/6, or 2.5YR 3/4. Moist colors are 7.5YR 5/6, 5YR 3/3, 3/4,

4/4, or 2.5YR 3/4. It is clay loam to clay with 15 to 35 percent gravel and 0 to 10 percent cobbles. It is neutral or slightly acid.

Some pedons lack a C horizon.

JAYEL FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the fine, oxidic, mesic family of Dystric Xerochrepts. They have developed in material weathered from peridotite. They are on mountain sideslopes at elevations of 500 to 3,500 feet. Slopes range from 15 to 40 percent. Mean annual precipitation is about 105 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California near Red Mountain lookout, about 1 mile northwest of the junction with South Red Mountain Road, on a south facing slope of 15 percent under knobcone pine, huckleberry oak, California coffeeberry, tanoak and some Douglas-fir at 3,500 feet elevation; in the NE 1/4 of the SE 1/4 of section 13, T. 13 N., R. 2 E., H.B.M.

A1-0 to 3 inches; yellowish red (5YR 5/6) clay loam, dark reddish brown (5YR 3/4) moist; strong, medium to coarse granular structure; slightly hard, firm, non-sticky and non-plastic; common very fine, few medium roots; 10 percent pebbles; neutral (pH 6.7); gradual smooth boundary. .

A2-3 to 11 inches; yellowish red (5YR 5/6) clay loam, yellowish red (5YR 4/6) moist; strong, medium to coarse granular structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine, few fine, medium, and coarse roots; neutral (pH 6.8); clear wavy boundary.

Bw1-11 to 24 inches; reddish yellow (7.5YR 6/6) silty clay, strong brown (7.5YR 4/6) moist; moderate very fine to fine subangular blocky structure; soft to slightly hard, firm, non-sticky and non-plastic; few

very fine, common fine, few medium roots; neutral (pH 6.8); gradual wavy boundary.

Bw2-24 to 40 inches; yellowish red (5YR 4/6) clay, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine and medium roots; 15 percent pebbles; neutral (pH 6.9).

R-40 inches; peridotite with soil in fractures.

Range in Characteristics: The depth to serpentinized peridotite ranges from 20 to 40 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 4 and 12 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation between the depths of 10 and 30 inches is estimated to be 20 to 50 percent.

The A horizon is 5YR 4/4, 4/6, 5/6, or 7.5YR 5/6. Moist colors are 5YR 3/4, 4/4, 4/6, 7.5YR 4/4, or 4/6. It is clay loam or silty clay loam with 30 to 40 percent clay and 5 to 20 percent gravel (shot-like nodules of oxides). It is neutral or slightly acid.

The Bw horizon is 5YR 4/6, 5/6, 5/8, 7.5YR 5/6, or 5/8. Moist colors are 5YR 4/4, 4/6, 7.5YR 4/4, 4/6, or 5/6. It is clay loam or clay, with 35 to 45 percent clay, not increasing by as much as 1.2 times more than the horizon above. It has 5 to 20 percent gravel and 0 to 10 percent stones.

JAYEL FAMILY, MODERATELY DEEP, STONY

These soils are moderately deep, stony phase members of the fine, oxidic, mesic family of Dystric Xerochrepts. They have developed in material weathered from peridotite. They are on mountain sideslopes at elevations of 500 to 3,500 feet. Slopes range from 5 to 60 percent. These soils are well drained. Mean annual precipitation is about 105 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, off Low Divide Road approximately 3/4 to 1 mile south of the junction with Rowdy Creek Road, about 13 meters upslope from road on a southeast facing slope of 10 percent under knobcone pine, tanoak, and huckleberry oak at 2,400 feet elevation; in the NE 1/4 of the NE 1/4 of section 34, T. 18 N., R. 1 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 10 inches; reddish brown (2.5YR 4/4) stony clay loam, dark brown (7.5YR 4/4) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine and medium, few coarse roots; 15 percent pebbles, 15 percent stones; neutral (pH 6.6); clear smooth boundary.

BA-10 to 18 inches; yellowish red (5YR 4/6) stony clay, strong brown (7.5YR 5/6) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and plastic; few very fine, common fine, few medium and coarse roots; 15 percent cobbles, 10 percent stones; neutral (pH 6.8); gradual smooth boundary.

Bw-18 to 31 inches; yellowish red (5YR 4/6) stony

clay, strong brown (7.5YR 5/6) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and plastic, few very fine, common fine, few medium and coarse roots; 10 percent stones; neutral (pH 6.6); clear smooth boundary.

R-31 inches; fractured peridotite; fractures 25 to 50 cm apart.

Range in Characteristics: Depth to peridotite ranges from 25 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 4 and 12 inches is usually dry in all part from mid-June to mid-October. The base saturation is 20 to 50 percent between the depths of 30 to 75 cm. Surface stones range from 15 to 35 percent.

The A horizon is 5YR 4/4, 4/6, or 7.5YR 5.6. Moist colors are 5YR 4/4, 4/6, 7.5YR 4/4, or 4/6. It is clay loam or silty clay loam with 30 to 40 percent clay, 10 to 30 percent gravel (shot-like nodules of oxides) and 15 to 30 percent stones. It is neutral to medium acid.

The Bw horizon is 5YR 4/6, 5/6, 5/8, 7.5YR 5/6, 5/8, or 10YR 5/8. Moist colors are 5YR 4/6, 7.5YR 4/4, 4/6, or 5/6. It is clay loam or clay, with 34 to 45 percent clay, not increasing as much as 2 percent over the horizon above. It has 5 to 15 percent gravel and 5 to 15 percent stones.

Some pedons have a C horizon.

Additional Data: Reference samples sent to Lincoln Laboratory for mineralogy and texture. Sample Nos. S79CA015-5 and 015-8.

KISTIRN FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Typic Haploxerults. They have formed in place from metasedimentary rock. They are on mountain sideslopes at elevations of 1,000 to 4,500 feet. Slopes range from 30 to 75 percent. These soils are well drained. Mean annual precipitation is about 65 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California on Salyer-Mad River Road, about 2.4 miles from Friday Ridge Road junction, on a north facing slope of 60 percent under Douglas-fir, tanoak, and madrone at 1,180 feet elevation; in the SE 1/4 of the SW 1/4 of section 22, T. 6 N., R. 5 E., H.B.M.

0-1 to 3 inches; fresh and decomposing leaf and needle litter.

A1-0 to 3 inches; yellowish brown (10YR 5/4) very gravelly loam, dark reddish brown (5YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium and coarse roots; 40 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

A2-3 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; 40 percent pebbles; medium acid (pH 5.7); gradual smooth boundary.

Bt1-8 to 24 inches; light yellowish brown (10YR 6/4) very cobbly clay loam dark brown (7.5YR 4/4) moist; moderate medium sub-angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, and fine, many medium, and common coarse roots; 30 percent pebbles, 20 percent cobbles; strongly acid (pH 5.4); gradual smooth boundary.

Bt2-24 to 53 inches; strong brown (7.5YR 5/6) very gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure;

slightly hard, friable, sticky and plastic; few very fine and fine, common medium and coarse roots; many thin clay films on ped faces; 35 percent pebbles, 5 percent cobbles; strongly acid (pH 5.4); abrupt wavy boundary.

C-53 to 79 inches; very pale brown (10YR 7/3) extremely gravelly silty clay, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; common medium and coarse roots; many thin clay films on ped faces and line pores; 55 percent pebbles, 10 percent cobbles; strongly acid (pH 5.3).

Range in Characteristics: Depth to metasedimentary rock ranges from 40 to more than 80 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June to mid-October. The base saturation, by Hach Kit, is 14 to 28 in the lower part of the argillic and in the C horizon.

The A horizon is 5YR 4/5, 7.5YR 6/4, 7/4, 10YR 4/2, 5/2, 5/4, 6/3, or 6/4. Moist colors are 5YR 3/3, 7.5YR 3/2, 4/4, 5/6, or 10YR 3/3. Where colors meet the criteria for a umbric epipedon the horizon lacks sufficient thickness to qualify. It is loam or silt loam with 20 to 60 percent gravel. It is slightly or medium acid.

The Bt horizon is 5YR 5/6, 7.5YR 5/6, 6/6, 6/8, 7/6, 7/8, 10YR 6/4, 7/1, 7/2, 7/3, 7/4, or 7/6. Moist colors are 5YR 4/6, 5/6, 7.5YR 4/4, 5/6, 5/8, 10YR 4/4, 5/4, 5/6, or 6/8. It is clay loam or silty clay loam, with 27 to 45 percent clay, 30 to 60 percent gravel, and 0 to 20 percent cobbles. The upper part of the Bt horizon has an average of 30 to 35 percent clay. It is slightly to strongly acid.

The C horizon is 10YR 7/2, or 7/3. Moist colors are 10YR 5/4, or 6/4. It is clay loam, clay or silty clay with 50 to 60 percent gravel and 10 to 30 percent cobbles. It is medium or strongly acid.

Some pedons lack C horizons.

LITHIC HAPLOXERALS, ULTRAMAFIC

Lithic Haploxeralfs, ultramafic soils are shallow, well drained, and formed in material weathered from serpentine. They are on mountain sideslopes and benches at elevations of 400 to 4,500 feet. Slopes range from 15 to 70 percent. Mean annual precipitation is about 115 inches.

Depth to a lithic contact is 12 to 18 inches. Mean annual soil temperature at the contact is 50 to 59°F. The soil is usually dry between 4 and 12 inches depth from mid-June to mid-October and moist the rest of the year.

The A horizon is 2 to 6 inches thick. Dry color is 10YR

6/3, 6/2 or 5/3; and moist color is 10YR 4/3, 3/3 or 3/2. Dark colors do not meet mollic criteria because they are either too thin or not directly underlain by the bedrock. The soil is gravelly loam or gravelly clay loam.

The Bt horizon is 4 to 20 inches thick. Dry color is 10YR 6/4 or 5/4; and moist color is 10YR 4/4 or 4/3. The soil is a clay loam or gravelly clay loam. There are few, thin to common, moderately thick clay films on ped faces and line pores.

Surface gravel ranges from 0 to 30 percent. Vegetation can be annual grasses, manzanita, and Jeffrey pine.

LITHIC XEROCHREPTS, ULTRAMAFIC

Lithic Xerochrepts, ultramafic soils are shallow, well drained and formed in material weathered from peridotite. They are on mountain sideslopes and ridges at elevations of 500 to 3,500 feet. Slopes range from 35 to 75 percent. Mean annual precipitation is about 105 inches.

Depth to serpentized peridotite ranges from 12 to 20 inches. Mean annual soil temperature at the contact is 50 to 59°F. The soil is dry between 4 and 12 inches depth from mid-June to mid-October and moist the rest of the year.

The A horizon is 4 to 8 inches thick. Dry colors are

7.5YR 5/4, 5/6 or 10YR 5/8; and moist colors are 7.5YR 4/4 or 2.5YR 3/6. It is clay loam or silty clay loam, with 5 to 20 percent gravel (shot-like nodules of oxides), and 5 to 20 percent stones.

The B horizon is 8 to 12 inches thick. Dry colors are 5YR 5/6 or 5/4; and moist colors are 7.5YR 5/6 or 5/4. It is a clay loam or silty clay loam.

Surface stones or cobbles range from 10 to 20 percent.

Vegetation is huckleberry oak, whiteleaf manzanita, knobcone pine, Douglas-fir, and sugar pine.

LITHIC XERORTHENTS

Lithic Xerorthents soils are very shallow or shallow, well to excessively drained soils, formed in material weathered from metasedimentary and metaigneous rocks. They are on mountain sideslopes and ridges at elevations of 600 to 4,500 feet. Slopes range from 60 to 90 percent. Annual precipitation is 60 to 90 inches.

Depth to a lithic contact is 3 to 18 inches. Mean annual soil temperature at the contact is 47 to 59°F. The soil is usually dry from late June to mid-September and is moist the rest of the year.

The A horizon is 3 to 10 inches thick. Dry color is 10YR 6/3, 6/2, 5/3, 5/2, 4/3 or 2.5Y 6/2; and moist color is 10YR 4/3, 3/3, 3/2 or 2/5Y 4/2. Dark colors do not meet mollic criteria because they are either too thin

or not directly underlain by the bedrock. The soil is gravelly sandy loam, very gravelly sandy loam, or very stony sandy loam. In some pedons the A horizon lies directly over the hard bedrock. In others a C horizon separates the A from the lithic contact. Rock fragments average 35 to 70 percent.

The C horizon is 3 to 10 inches thick. Dry color is 10YR 7/2, 6/3, 5/4, or 5/3; and moist color is 10YR 4/4, 4/3, or 3/4. It is very gravelly sandy loam, extremely gravelly sandy loam, or extremely cobbly sandy loam and averages 50 to 85 rock fragments.

Vegetation: Tanoak, madrone, canyon live oak, and some scattered Douglas-fir.

MADDEN FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the fine, serpentinic, mesic family of Mollic Haploxeralfs. They have developed in place from serpentinic rock. They occur on mountain ridges and sideslopes at elevations of 1,000 to 4,800 feet. Slopes range from 20 to 50 percent. These soils are well drained. Mean annual precipitation is about 55 inches. Mean annual temperature is about 54°F.

Typical Pedon: Located in Trinity County, California, on Hennessy Ridge, on Old Hennessy Road about 1/8 mile west of the junction of four roads on the ridge top, on a northwest facing slope of 25 percent under Douglas-fir, incense-cedar and ponderosa pine at 3,100 feet elevation; in the middle of section 8, T. 5 N., R. 6 E., H.B.M.

0-1 inch to 0; fresh and decomposing needle litter.

A-0 to 8 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 3/2) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, few fine roots; neutral (pH 6.8); clear smooth boundary.

Bt1-8 to 15 inches; brown (7.5YR 5/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine, common medium and coarse roots; very few moderately thick clay films on ped faces, few thin clay films line pores; neutral (pH 7.0); gradual smooth boundary.

Bt2-15 to 24 inches; dark brown (7.5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine, common medium and coarse roots; few moderately thick clay films on ped faces, few thin clay films line pores; 5 percent cobbles; neutral (pH 7.0); clear

smooth boundary.

Bt3-24 to 31 inches; dark yellowish brown (10YR 4/4) clay, dark brown (7.5YR 3/4) moist; moderate fine and medium sub-angular blocky structure; very hard, firm, very sticky and plastic; few fine, common medium and coarse roots; continuous thin clay films line pores; neutral (pH 7.2); clear wavy boundary.

Bt4-31 to 37 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common thin clay films line pores; few fine and common medium roots; mildly alkaline (pH 7.5); abrupt wavy boundary.

R-37 inches; fractured serpentinic bedrock with cracks less than 4 inches apart.

Range in Characteristics: Depth to serpentinic rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be about 54°F. The soil between the depths of 4 and 12 inches is usually dry in all parts from mid-June through mid-October and moist throughout between November and April. The base saturation is assumed to be more than 75% throughout. It is assumed that more than 40 percent by weight of the soil >2 mm diameter is serpentine minerals.

The A horizon is 5YR 5/4, 7.5YR 5/4, or 6/4. Moist colors are 5YR 3/3, 3/4, or 7.5YR 3/2. It is loam or clay loam with 0 to 20 percent gravel. It is neutral or slightly acid.

The Bt horizon is 7.5YR 4/4, 5/4, 10YR 4/4, or 5/4. Moist colors are 5YR 3/4, 7.5YR 4/4, or 10YR 3/3. It is heavy clay loam or clay with an increase of at least 1.2 times more clay than the above horizon. It has 0 to 20 percent gravel, 0 to 5 percent cobbles. It is slightly acid to mildly alkaline.

MAYMEN FAMILY

These soils are members of the loamy, mixed, mesic family of Dystric Lithic Xerochrepts. They have developed in material weathered from sedimentary, metasedimentary, or igneous rock. They are on mountain sideslopes and ridges at elevations of 400 to 4,800 feet. Slopes range from 35 to 90 percent. These soils are well drained. Mean annual precipitation varies from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, on Groves Prairie Road (Forest Service road 7N04), approximately 2 miles south of the junction with Waterman Ridge Road (Forest Service road 7N02), on a southwest facing slope of 35 percent under tanoak, madrone, canyon live oak, and some Douglas-fir at 3,150 feet elevation; in the SW 1/4 of the NW 1/4 of section 8, T. 6 N., R. 6 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf litter.

A-0 to 2 inches; pale brown (10YR 6/3) gravelly loam, very dark brown (10YR 3/2) moist; moderate very fine granular structure; soft, friable, non-sticky and slightly plastic; few very fine and fine roots; 20 percent pebbles; medium acid (pH 5.8); abrupt wavy boundary.

Bw1-2 to 6 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 4/3) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine, few medium roots; 30 percent pebbles; strongly acid (pH 5.5); clear wavy boundary.

Bw2-6 to 18 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine and fine sub-angular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, medium, and coarse roots; very few thin clay films on ped faces; 30 percent pebbles; medium acid (pH 5.8); abrupt wavy boundary.

R-8 inches; fractured phyllite bedrock; fractures 2 to 10 cm apart.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 10 to 20 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 4 and 12 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation is assumed to be 15 to 50 percent between the depths of 10 inches and a lithic contact. Surface rock fragments range from 0 to 10 percent.

The A horizon is 10YR 5/3, 5/4, 6/2, 6/3, or 7/3. Moist colors are 10YR 2/2, 4/3, 4/4, or 5/4. Where colors are dark the horizon is too thin to be umbric. It has 15 to 40 percent gravel. It is neutral to medium acid.

The Bw horizon is 10YR 6/3, 6/4, 7/3, or 7/4. Moist colors are 10YR 4/3, 4/4, 5/4, or 5/6. It has 10 to 30 percent gravel. It is slightly to strongly acid. Lacks sufficient clay increase to qualify for an argillic horizon.

MAYMEN FAMILY, DIORITIC

These soils are dioritic phase members of the loamy, mixed, mesic family of Dystric Lithic Xerochrepts. They have developed in material weathered from quartz diorite rock. They are on mountainsides and ridges at elevations of 400 to 4,800 feet. Slopes range from 30 to 90 percent. These soils are somewhat excessively drained. Mean annual precipitation ranges from 60 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near Ziegler Point, on Waterman Ridge Road about 0.2 miles north of the junction with a jeep road; on a south facing slope of 70 percent under Douglas-fir, canyon live oak, tanoak, and madrone at 3,800 feet elevation; in the NW 1/4 of the NW 1/4 of section 10, T. 6 N., R. 6 E., H.B.M.

0-1/2 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 7 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, dark brownish gray (10YR 4/2) moist; weak very fine and fine granular structure; loose; common very fine and fine roots; 20 percent pebbles; strongly acid (pH 5.5); abrupt wavy boundary.

Bw-7 to 16 inches; light yellowish brown (10YR 6/4)

gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; single grain; loose; common very fine and fine roots; 30 percent pebbles; slightly acid (pH 6.2); abrupt wavy boundary.

R-17 inches; quartz diorite bedrock.

Range in Characteristics: The depth to diorite ranges from 12 to 20 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June through mid-October and moist throughout between November and April. The base saturation is assumed to be 15 to 50 percent between the depth of 10 inches and a lithic contact. Surface rock fragments range from 0 to 20 percent.

The A horizon has dry color of 10YR 5/3, 5/4, 6/2, or 6/3; and moist color of 10YR 3/1, 3/2, 4/2, or 4/4. Where colors are dark the horizon is too thin to be mollic or umbric. It is sandy loam or coarse sandy loam with 15 to 35 percent gravel.

The Bw horizon has dry color of 10YR 6/3, or 6/4; and moist color of 10YR 3/4, 4/4, or 5/6. It has 10 to 35 percent gravel. It is slightly to strongly acid.

MELBOURNE FAMILY, DEEP

These soils are deep phase members of the fine, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from sedimentary and metasedimentary rock. They are on mountainsides and benches at elevations of 1,000 to 4,800 feet. Slopes range from 5 to 50 percent. The soils are moderately well to well drained. Mean annual precipitation is about 65 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near Panther Peak, on county road 502, about 0.5 miles north of Panther Creek upslope from the road; on a SE facing slope of 30 percent under Douglas-fir and white oak, with some ponderosa pine at 3,650 feet elevation; in the SE 1/4 of the NW 1/4 of section 36, T. 2 S., R. 6 E., H.B.M.

A-0 to 8 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; strong coarse granular structure; slightly hard, firm, slightly sticky, plastic; many very fine and fine, common medium roots; slightly acid (pH 6.2); gradual wavy boundary.

BA-8 to 14 inches; light yellowish brown (10YR 6/4) clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky, plastic; many fine, common medium, few coarse roots; slightly acid (pH 6.2); gradual wavy boundary.

Bt1-14 to 27 inches; pale brown (10YR 6/3) gravelly clay loam, olive brown (2.5Y 4/3) moist; moderate medium subangular blocky structure; hard, very firm slightly sticky, plastic; many fine, common medium and coarse roots; few thin clay films on

ped faces and line pores; 25 percent pebbles, 10 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

C-27 to 45 inches; grayish brown (10YR 5/2) very gravelly clay, dark gray (10YR 4/1) moist; massive; hard, firm, sticky, plastic; common fine, few medium, common coarse roots; 40 percent pebbles; medium acid (pH 5.8).

Range in Characteristics: The depth to metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation is 30 to 60 percent in the upper 30 inches of the argillic horizon.

The A horizon has dry color of 10YR 6/3, 6/4, 2.5Y 5/2, or 6/2; and moist color of 10YR 3/3, 3/4, 4/3, 4/4, 2.5Y 3/2, or 4/2. Where colors are dark the horizon is too thin to be mollic or umbric. It is loam, clay loam, or silty clay loam with 0 to 45 percent gravel. It is neutral to strongly acid.

The Bt horizon has dry color of 5YR 5/3, 6/3, 10YR 6/3, 6/6, 7/4, 7/6, or 2.5Y 6/2; and moist color of 5YR 4/3, 5/6, 10YR 4/3, 4/6, 4/7, 5/2, 5/4, 5/6, 2.5Y 3/2, or 4/3. It is clay loam, clay, or silty clay, increasing by at least 5 percent clay over the horizon above. It has 0 to 35 percent gravel.

Some pedons lack a C horizon.

NANNY FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed frigid family of Typic Xerumbrepts. They have developed in material weathered from igneous, metaigneous or metasedimentary rock. They are on mountainsides and broad ridges at elevations of 3,800 to 6,000 feet. Slopes range from 5 to 70 percent. These soils are well drained. Mean annual precipitation ranges from 70 to 110 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, on Forest Service road 18N07, approximately 1.5 miles northwest of Sanger Lake, about 50 feet upslope from road; on a SE facing slope of 30 percent under white fir, Sadler oak, ribes sp., Oregon grape, with some Douglas-fir and sugar pine at 4,600 feet elevation; in the SW 1/4 of the NW 1/4 of section 32, T. 18 N., R. 5 E., H.B.M.

0-5 to 0 inches; fresh and decomposing needle litter.

A-0 to 2 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, few fine and medium roots; 20 percent pebbles; slightly acid (pH 6.3); clear smooth boundary.

Bw1-2 to 10 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine, few medium and coarse roots; 45 percent pebbles; slightly acid (pH 6.3); clear wavy boundary.

Bw2-10 to 16 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; common very fine and fine, few medium roots; 80 percent pebbles; slightly acid (pH 6.3); clear smooth boundary.

Bw3-16 to 31 inches; very pale brown (10YR 7/3) extremely gravelly loam, brown (10YR 4/3) moist; slightly hard, firm, slightly sticky, slightly plastic; common very fine and fine, few medium roots; 75 percent pebbles; medium acid (pH 6.3); clear wavy boundary.

Bw4-31 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; slightly hard, firm, slightly sticky, slightly plastic; common very fine, fine, few medium and coarse roots; few moderately thick clay films on ped faces and line pores; 60 percent pebbles; slightly acid (pH 6.3).

Range in Characteristics: The depth to metaigneous or metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 45°F. The mean summer soil temperature is estimated to be 48°F and the difference between mean summer and mean winter soil temperature is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-July to mid-October and moist throughout between November and April. The base saturation is estimated to range from 25 to 35 percent. Surface rock fragments range from 5 to 20 percent.

The A horizon has dry color of 10YR 3/2, 4/2, 4/3, or 5/3; and moist color of 10YR 2/1, 3/1, 3/2, or 3/3. It has 15 to 60 percent gravel. It is neutral to medium acid.

The Bw horizon has dry color of 7.5YR 3/4, 10YR 5/3, 5/6, 6/3, 7/3, or 2.5Y 7/2; and moist color of 10YR 3/3, 3/4, 3/6, 4/3, 4/4, 2.5Y 4/6, or 5/4. The upper part of the Bw horizon has dry values of 3 or 5 and moist values and chromas of 3. It is loam or sandy loam with 35 to 80 percent gravel. It is slightly to strongly acid.

Some pedons have a C horizon.

NANNY FAMILY, DEEP, DIORITIC

These soils are deep, dioritic phase members of the loamy-skeletal, mixed, frigid family of Typic Xerumbrepts. They have developed in material weathered from quartz diorite and dioritic glacial till. They are on mountainsides at elevations of 3,800 to 6,000 feet. Slopes range from 30 to 70 percent. These soils are well drained. Mean annual precipitation ranges from about 80 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, near Siskiyou Pass on Forest Service road 17N04, in a roadcut about 0.75 miles west of the Forest boundary; on a northeast facing slope of 70 percent under white fir, red fir, hazel, Sadler oak, bitter cherry, and thimbleberry, with some Douglas-fir and incense cedar at 4,300 feet elevation; in the SW 1/4 of the NW 1/4 of section 1, T. 16 N., R. 4 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A1-0 to 2 inches; yellowish brown (10YR 5/4) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, common fine, few medium roots; 25 percent pebbles, 5 percent cobbles and stones; strongly acid (pH 5.4); gradual wavy boundary.

A2-2 to 13 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate, fine granular structure; soft, very friable, non-sticky and nonplastic; many very fine, common fine and medium, few coarse roots; 10 percent cobbles, 30 percent pebbles; strongly acid (pH 5.4); gradual wavy boundary.

Bw1-13 to 27 inches; yellowish brown (10YR 5/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine granular structure; soft,

friable, nonsticky and nonplastic; common very fine and medium roots; 30 percent pebbles, 10 percent cobbles; strongly acid (pH 5.5); gradual wavy boundary.

Bw2-27 to 55 inches; brownish yellow (10YR 6/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine granular structure; soft, very friable, non-sticky and nonplastic; common very fine, few fine roots; 30 percent pebbles, 20 percent cobbles and stones; medium acid (pH 5.6).

Cr-55 inches; weathered dioritic glacial till.

Range in Characteristics: The depth to weathered dioritic glacial till ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 45°F. Mean soil temperature is estimated to be 48°F and the difference between the mean summer and mean winter soil temperature is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation in the epipedon is estimated to range from 30 to 40 percent. Surface coarse fragments range from 0 to 15 percent.

The A horizon has dry color of 10YR 4/1, 5/4, 5/5, 6/4, or 7/4; and moist color of 10YR 3/2, 3/3, 3/4, or 4/3. Colors that are too light for an umbric epipedon occur below 10 inches. It is loam or sandy loam with 15 to 45 percent gravel. It is medium or strongly acid.

The Bw horizon has dry color of 10YR 5/4, 5/5, 5/6, 6/6, or 7/6; and moist color of 10YR 3/4, 4/4, or 4/6. It has 35 to 65 percent gravel.

Some pedons have a C horizon. It is underlain by weathered dioritic glacial till.

NANNY FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, mixed, frigid family of Typic Xerumbrepts. They have developed in material weathered from sedimentary, metasedimentary, or metaigneous rock. They are on mountainsides at elevations of 4,500 to 6,000 feet. Slopes range from 35 to 70 percent. These soils are somewhat excessively drained. Mean annual precipitation ranges from 50 to 100 inches. Mean annual temperature is about 45°F.

Typical Pedon: Located in Humboldt County, California, on Forest Service trail 6E07, about 1.5 miles northwest of Whitey's Peak; on a south facing slope of 35 percent under Sadler oak, greenleaf manzanita, snowbrush, and bittercherry, with some white and noble fir at 5,600 feet elevation; in the SW 1/4 of section 25, T. 10 N., R. 6 E., H.B.M.

0-2 inches to 0; fresh and decomposing leaf litter.

A1-0 to 5 inches; very dark grayish brown (10YR 3/2) very gravelly loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; 40 percent pebbles, 5 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

A2-5 to 17 inches; brown to dark brown (10YR 4/3) very gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; 40 percent pebbles, 5 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

Bw-17 to 35 inches; light olive brown (2.5Y 5/4) ex-

tremely gravelly loam, olive brown (2.5Y 4/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; common medium roots; 60 percent pebbles, 25 percent cobbles; very strongly acid (pH 5.0); abrupt wavy boundary.

R-35 inches; fractured metabasic rock.

Range in Characteristics: The depth to metaigneous rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 45°F. and the difference between mean winter and mean summer soil temperatures is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June through mid-October and moist throughout between November and April. The base saturation in the epipedon is estimated to range from 30 to 40 percent. Surface coarse fragments range from 5 to 20 percent.

The A horizon has dry color of 7.5YR 4/4, 5/4, 10YR 3/1, 3/2, 4/2, or 5/3; and moist color of 7.5YR 3/2, 4/4, 10YR 2/1, 2/2, 3/2, or 4/4. Colors that are too light for an umbric epipedon occur below 10 inches. It has 15 to 40 percent gravel and 0 to 10 percent cobbles and stones. It is medium to very strongly acid.

The Bw horizon has dry color of 10YR 5/3, 6/4, 8/4, 2/5Y 5/4, or 8/4; and moist color of 10YR 4/3, 4/4, 5/4, 6/6, 2/5Y 4/4, or 5/6. It has 35 to 60 percent gravel and 15 to 50 percent cobbles and stones.

Some pedons have a C horizon.

ORAGRAN FAMILY

These soils are members of the loamy, serpentinitic, mesic family of Lithic Xerochrepts. They have developed in material weathered from serpentinized ultramafic rock. They are on mountainsides at elevations of 400 to 4,800 feet. Slopes range from 5 to 70 percent. These soils are well drained. Mean annual precipitation ranges from 90 to 115 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, in a roadcut on the road to Red Mountain Lookout, about 1.0 miles northwest of the junction with South Red Mountain road; on an east facing slope of 10 percent under knobcone pine, lodgepole pine, azalea, huckleberry and red huckleberry oak at 4,060 feet elevation; in the SW 1/4 of the NW 1/4 of section 13, T. 13 N., R. 2 E., H.B.M.

0–5 inches to 0; fresh and decomposing leaf and needle litter.

A1–0 to 2 inches; yellowish brown (10YR 5/4) very stony loam, dark brown (10YR 4/3) moist; moderate very fine granular structure; soft, friable, nonsticky and nonplastic; few very fine, common fine, few medium roots; many very fine interstitial and tubular pores; 15 percent pebbles, 30 percent stones; medium acid (pH 5.8); clear smooth boundary.

BA–2 to 12 inches; brownish yellow (10YR 6/6) stony silt loam, yellowish brown (10YR 5/6) moist; weak

very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine, fine, medium and coarse roots; many very fine interstitial and tubular pores; 15 percent stones; medium acid (pH 6.0); abrupt irregular boundary.

R–12 inches; serpentinized peridotite.

Range in Characteristics: Depth to ultramafic rock is 10 to 20 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation in similar soils, by Hach kit, is about 60 percent just above the lithic contact. Surface stones and cobbles range from 5 to 30 percent.

The A horizon has dry color of 10YR 5/3, 5/4, or 7/4; and moist color of 7.5YR 5/6, 10YR 4/3, or 4/6. It is loam or silt loam with 10 to 20 percent gravel and 10 to 30 percent stones. It is slightly or medium acid.

The Bw horizon has dry color of 10YR 6/3, 6/8, or 2.5Y 7/4; and moist color of 10YR 5/6, or 6/6. It has 0 to 25 percent gravel and 0 to 15 percent stones.

The lithic contact is fractured serpentine or serpentinized peridotite with fractures 0.5 to 19 inches apart.

OXALIS FAMILY, DEEP

These soils are deep phase members of the fine, montmorillonitic, thermic family of Vertic Xerochrepts. They have developed in material weathered from sheared shale and phyllite (or fault gouge). They are on hummocky mountainsides at elevations of 2,000 to 4,800 feet. Slopes range from 25 to 70 percent and typically have southern exposures. These soils are somewhat poorly to moderately well drained. Mean annual precipitation is about 65 inches. Mean annual temperature is about 52°F.

Typical Pedon: Located in Trinity County, California, north of Brown's Canyon, on Forest Service road INID, approximately 1.3 miles west of low water crossing; pit is about 100 feet upslope from road on a south facing slope of 45 percent under annual grasses, legumes and other forbs at 3,365 feet elevation; in the NE 1/4 of the SW 1/4 of section 31, T. 1 N., R. 6 E., H.B.M.

A-0 to 8 inches; light brownish gray (2.5Y 6/2) silty clay loam, very dark grayish brown (2.5Y 3/2) moist; strong fine to medium subangular blocky structure; hard, firm, slightly sticky, slightly plastic; common very fine and fine roots; slightly acid (pH 6.2); gradual wavy boundary.

BA-8 to 20 inches; light brownish gray (2.5Y 6/2) silty clay, dark grayish brown (2.5Y 4/2) moist; weak fine and coarse subangular blocky structure; very hard, very firm, sticky, plastic; gray pressure faces on peds, dark gray (10YR 4/1) moist; slightly acid (pH 6.2); diffuse wavy boundary.

Bw-20 to 40 inches; light brownish gray (2.5Y 6/2) silty clay, dark grayish brown (2.5Y 4/2) moist; weak coarse sub-angular blocky structure; extremely hard, very firm, sticky, very plastic; gray (10YR 5/1) pressure faces on peds, dark gray (10YR 4/1) moist; neutral (pH 6.6); diffuse wavy boundary.

C-40 to 60 inches; pale olive (5Y 6/4) gravelly silty clay,

olive gray (5Y 5/2) moist; common fine dark gray (10YR 4/1) mottles, very dark gray (10YR 3/1) moist; weak coarse subangular blocky structure; extremely hard, very firm, sticky, plastic; 15 percent pebbles; many large and medium distinct mottles; neutral (pH 6.6).

Range in Characteristics: Depth to sheared shale ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 59 to 63°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation, by Hach kit, ranges from 60 to 70 percent in the A horizon. Clay percentage does not increase enough to qualify for an argillic horizon. In most years there are cracks at some period that are 1 cm wide in the A and B horizons.

The A horizon has dry color of 2.5Y 5/2, 6/2, 5Y 5/2, or 10YR 6/2; and moist color of 2.5Y 3/2, 4/2, 5Y 3/2, or 10YR 3/2. It is clay loam or silty clay loam, with 0 to 10 percent gravel. It is medium acid to mildly alkaline. Cracks range from 1 to 1.5 cm wide.

The Bw horizon has dry color of 2.5Y 6/2, 5/1, 5Y 6/2, or 10YR 6/1; and moist color of 2.5Y 4/1, 4/2, 5Y 5/2, or 10YR 4/1. It is silty clay or clay, with 0 to 35 percent gravel. It is medium acid to moderately alkaline. Cracks range from 1 to 1.5 cm wide.

The C horizon has dry color of 5Y 4/2, 6/4, 7/1, or 10YR 6/1; and moist color of 5Y 4/1, 5/1, 5/2, or 10YR 4/1. Mottles are 5Y 6/2, 10YR 4/1 dry, and 2.5Y 5/6, 3/2 moist. Gravel content is 0 to 35 percent. It is neutral to mildly alkaline.

Some pedons lack a C horizon.

PITS AND DUMPS

These consist of placer mines located in old terrace deposits of Tertiary river gravels. The gravels and alluvial material were removed in the mining process down to the hard underlying rock, leaving highly dissected depres-

sions containing scattered piles of large boulders. These areas have nearly vertical side slopes and flat bottoms. The vegetation on the bottoms of these depressions consist of a few scattered shrubs and trees.

RACE FAMILY, DEEP

These soils are deep phase members of the fine-loamy, micaceous, frigid family of Dystric Xerochrepts. They have developed in material weathered from mica schist. They are on mountainsides and ridges at elevations of 4,500 to 5,800 feet. Slopes range from 35 to 75 percent. These soils are well to moderately well drained. Mean annual precipitation is about 60 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Trinity County, California, on South Fork Mountain, on Forest Service road 2502, approximately 0.8 miles west of the Cedar Gap junction; pit is upslope from road about 20 feet on a south facing slope of 45 percent under white fir, incense-cedar, and ponderosa pine, with a few Douglas-fir at 4,590 feet elevation; in the SE 1/4 of the SE 1/4 of section 29, T. 28 N., R. 12 W., M.D.B.M.

0-1.5 inches to 0; fresh and decomposing needle litter.

A-0 to 6 inches; light olive gray (5Y 6/2) gravelly loam, dark olive gray (5Y 3/2) moist; moderate and strong coarse and medium granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine, common medium roots; many very fine and fine interstitial and tubular pores; 20 percent pebbles; neutral (pH 6.6); clear wavy boundary.

Bw1-6 to 10 inches; light brownish gray (2.5Y 6/2) gravelly loam, olive gray (5Y 4/2) moist; moderate fine sub-angular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium, few coarse roots; many very fine interstitial and tubular pores; 20 percent pebbles; slightly acid (pH 6.4); clear wavy boundary.

Bw2-10 to 16 inches; pale Yellow (5Y 7/3) gravelly loam, olive (5Y 4/3) moist; moderate fine to medium subangular blocky structure; soft, friable, slightly sticky and plastic; common fine and medium, few coarse roots; many very fine tubular pores; 20 percent pebbles, 10 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.

Bw3-16 to 30 inches; light gray (5Y 7/2) cobbly clay loam, olive (5Y 5/3) moist; moderate fine and medium sub-angular blocky structure; common fine, medium, and coarse roots; many very fine tubular pores; 10 percent pebbles, 20 percent cobbles; medium acid (pH 6.0); gradual wavy boundary.

BC-30 to 40 inches; pale yellow (5Y 8/3) gravelly loam, olive (5Y 5/4) moist; weak fine and coarse subangular blocky structure; soft, firm, slightly sticky and slightly plastic; few fine and medium roots; common very fine tubular pores; 20 percent pebbles, 10 percent cobbles; medium acid (pH 5.8) clear wavy boundary.

C-40 to 55 inches; white (5Y 8/1) gravelly silt loam, pale olive (5Y 6/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine tubular pores; 30 percent pebbles; medium acid (pH 5.8).

Range in Characteristics: Depth to micaceous schist ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be less than 46°F. The mean summer soil temperature is estimated to be 48 to 40°F. and the difference between the mean summer and mean winter soil temperatures is estimated to be more than 9°F. The soil between the depths of about 4 and 12 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation, by Hach kit, is about 40 percent at a depth of about 27 inches. All horizons contain visible flecks of mica and exhibit the greasy feel characteristic of that mineral. The rock fragment content of the 10 to 40 inch control section is 10 to 35 percent.

The A horizon has dry color of 10YR 6/3, 7/2, or 2.5YR 6/2; and moist color of 10YR 4/3, 3/3, or 2.5Y 3/2. It is loam or silt loam with 20 to 27 percent clay and with 0 to 30 percent gravel. It is neutral to medium acid.

The Bw horizon is 2.5Y 7/2, 7/4, 5Y 5/3, 6/3, 7/2, 7/3, 7/4, 7/6, or 8/3; and moist color of 2/5Y 4/2, 5/4, 5Y 4/2, 4/3, 5/3, 5/6, or 6/4. It is loam, silt loam, clay loam, or silty clay loam with 20 to 32 percent clay, not increasing by as much as 1.2 times over the horizon above. It has 10 to 35 percent gravel and 0 to 20 percent cobbles. It is slightly or medium acid.

The C horizon has dry color of 2.5Y 6/3, 6/2, 6/4, 5Y 8/1, or 8/6; and moist color of 2.5Y 4/2, 4/4, 6/4, 5Y 6/3, or 6/6. It is silt loam or silty clay loam with 0 to 35 percent gravel and 0 to 10 percent cobbles.

RAISIO FAMILY, MODERATELY DEEP*

These soils are moderately deep phase members of the loamy-skeletal, mixed, non-acid, mesic family of Typic Xerorthents. They have developed in material weathered from metaigneous or diorite rock. They are on mountain sideslopes at elevations of 600 to 4,800 feet. Slopes range from 45 to 75 percent. These soils are somewhat excessively drained. Mean annual precipitation is about 80 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, at the headwaters of Quinby Creek, on Forest Service road 7N04 about 1 mile southeast of the junction with Forest road 7N02, on a west facing slope of 45 percent under Douglas-fir, madrone, and tanoak at 300 feet elevation; in the NW 1/4 of section 5., T. 6 N., R. 6 E., H.B.M.

0-.5 to 0 inch; fresh and decomposing leaf and needle litter.

A-0 to 11 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 4/3) moist; moderate very fine and fine granular structure; soft, very friable, non-sticky and non-plastic; common very fine roots; 35 percent pebbles; medium acid (pH 5.7); abrupt wavy boundary.

Cl-11 to 29 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; loose, loose, non-sticky and non-plastic; common fine and medium roots; 60 percent pebbles; strongly acid (pH 5.5); clear wavy boundary.

C2-29 to 40 inches; brownish yellow (10YR 6/6) extremely gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; single grained; loose, loose, non-sticky and non-plastic; common fine, medium and coarse roots; 85 percent pebbles; strongly acid (pH 5.5).

R-40 inches; weathered meta-diorite.

Range in Characteristics: The depth to dioritic bedrock ranges from 20 to 40 inches. Mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June to mid-October, and moist throughout between November and April. The base saturation is estimated to be 60 to 70 percent between the depths of 25 and 75 cm. Surface rock fragments range from 20 to 80 percent. The 10 to 40 inch control section has 5 to 15 percent clay content, and 50 to 75 percent sand.

The A horizon is 10YR 4/2, 5/2, or 5/3. Moist colors are 5YR 3/4, 10YR 4/3, or 4/4. It is loam or sandy loam, with 35 to 60 percent gravel.

The C horizon is 10YR 5/3, 5/4, or 6/6. Moist colors are 10YR 4/3, 4/4, 4/6, or 5/6. It is loam, sandy loam, or loamy sand, with 50 to 85 percent gravel. It is strongly or medium acid.

*This soil is a taxadjunct. The color value moist is 1 value too light to be mollic. The official Raisio series is classified Entic Ultic Haploxerolls, loamy-skeletal, mixed, mesic.

RIVERWASH

Riverwash is sand, gravel, cobble and boulder deposits between low and high water levels on major rivers. It also consists of similar deposits, somewhat systematically

piled, by the action of gold dredges. It supports little or no vegetation and is subject to frequent flooding. It is on 2 to 10 percent slopes at 500 to 4,000 ft. elevation.

ROCK OUTCROP

Rock outcrop consists of contiguous bare bedrock with less than 15 percent inclusions of soil capable of supporting plants.

The following kinds of bedrock were named as mapping unit components:

Rock outcrop, dioritic. This consists of granitic rocks including quartz diorite, diorite, and quartz monzonite.

Rock outcrop, metaigneous. This consists of igneous

rocks which have undergone metamorphism and include: metatuff, metabreccia, and greenstone.

Rock outcrop, metasedimentary. This consists of sedimentary rocks which have undergone metamorphism and include: phyllite, metachert, semischist, schist and gneiss.

Rock outcrop, ultramafic. This includes rocks dominated by pyroxene and olivine minerals and include serpentinitized peridotite and serpentinite.

ROGUE FAMILY, DEEP

These soils are deep phase members of the coarse-loamy, mixed, frigid family of Dystric Xerochrepts. They have developed in material weathered from dioritic rock. They are on mountain ridges and sideslopes at elevations of 4,500 to 6,000 feet. Slopes range from 30 to 70 percent. These soils are somewhat excessively drained. Mean annual precipitation varies from 60 to 80 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Humboldt County, California, on Friday Ridge Road (Forest Service road 6N08) about .2 mile east of the Friday Camp turnoff, on a northwest facing slope of 40 percent under white fir, chinquapin, *Ceanothus* sp., Sadler oak, with some Douglas-fir and tanoak at 4,350 feet elevation; in the NE 1/4 of the SE 1/4 of section 11, T. 5 N., R. 4 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 7 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, non-sticky and non-plastic; common very fine, few fine roots; 10 percent pebbles, 5 percent cobbles; slightly acid (pH 6.2) gradual smooth boundary.

BA-7 to 20 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, non-sticky and non-plastic; common very fine, and fine roots; slightly acid (pH 6.2); 10 percent pebbles; clear smooth boundary.

Bw-20 to 41 inches; Pale yellow (2.5Y 7/4) gravelly sandy loam, brown (10YR 4/3) moist; weak fine

subangular blocky structure breaking to weak fine granular structure; soft, very fine, common fine and medium roots; 20 percent pebbles, 8 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

C-41 to 57 inches; pale yellow (2.5Y 7/4) loamy sand, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, non-sticky and non-plastic; common fine, medium, few coarse roots; 5 percent cobbles; medium acid (pH 5.8); clear wavy boundary.

Cr-57 to 61 inches; highly weathered quartz diorite.

Range in Characteristics: The depth to diorite ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 45°F, mean summer soil temperature is estimated to be 48°F, and the difference between mean summer and mean winter soil temperature is estimated to be more than 5°C. the soil between the depths of 8 and 24 inches is usually dry in all parts from mid-July to mid-October, and moist throughout between November and April. The base saturation in the upper 30 inches ranges from 25 to 35 percent.

The A horizon is 10YR 4/2, 4/3, or 5/3. Moist colors are 10YR 3/2, 4/3, or 4/4. It is loam or sandy loam with 10 to 30 percent gravel. It is slightly to strongly acid.

The Bw horizon is 10YR 6/3, 6/4, 2.5Y 7/4, 7/5, or 7/6. Moist colors are 10YR 4/3, 5/4, or 5/6. It is medium or strongly acid. Depth to loamy sand is greater than 40 inches.

Some pedons lack a C horizon.

RUBBLE LAND

Rubble land consists of areas of detached rock fragments (colluvium) which have accumulated on very steep

mountain sides. These areas support little or no vegetation and are subject to frequent movement.

SKALAN FAMILY, DEEP

These soils are deep phase members of the loamy-skeletal, mixed, mesic family of Ultic Haploxeralfs. They have developed in place from metasedimentary or metaigneous rock. They are on mountain ridges and sideslopes at elevation of 600 to 4,800 feet. Slopes range from 5 to 70 percent. These soils are well to somewhat excessively well drained. Mean annual precipitation varies from 50 to 90 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, on Forest Service road 6N06, about 1/2 mile south of the Oak Knob turnoff, on a southeast facing slope of 23 percent under Douglas-fir, tanoak and madrone at 3,000 feet elevation; in the SE 1/4 of the SW 1/4 of section 10, T. 5 N., R. 5 E., H.B.M.

0-1/2 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 3 inches; very dark gray (10YR 3/1) very gravelly loam, black (10YR 2/1) moist; weak fine granular structure; soft, friable, non-sticky and non-plastic; common very fine, fine, and medium roots; 55 percent pebbles; strongly acid (pH 5.2); clear smooth boundary.

A2-3 to 12 inches; pale brown (10YR 6/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, and fine, few medium roots; 45 percent pebbles, 5 percent cobbles; strongly acid (pH 5.4); clear smooth boundary.

Bt1-12 to 26 inches; very pale brown (10YR 7/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; few thin clay films on ped faces; 45 percent pebbles, 10 percent cobbles; strongly acid (pH 5.4); clear smooth boundary.

Bt2-26 to 45 inches; strong brown (7.5YR 4/6) very

gravelly clay loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few medium and coarse roots; common moderately thick clay films on ped faces and line pores; 45 percent pebbles, 5 percent cobbles; strongly acid (pH 5.5); gradual smooth boundary.

Bt3-45 to 56 inches; dark reddish brown (5YR 3/4) gravelly clay loam, yellowish red (10YR 5/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and coarse roots; common moderately thick clay films on ped faces and line pores; 15 percent pebbles, 5 percent cobbles; medium acid (pH 5.7); Abrupt boundary.

R-56 inches; fractured metasedimentary rock.

Range in Characteristics: The depth to metaigneous or metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout from November through April. The base saturation is 40 to 70 percent in the upper 75 cm of the argillic horizon. Surface rock fragments range from 0 to 10 percent.

The A horizon is 10YR 3/1, 3/2, 4/3, 5/2, or 6/3. Moist colors are 10YR 2/1, 2/2, 3/1, 3/3, 4/3, or 4/4. Where colors are dark the horizon is too thin to be mollic or umbric. It has 15 to 55 percent gravel. It is slightly to strongly acid.

The B horizon is 5YR 3/4, 5/6, 6/4, 6/6, 7.5YR 4/4, 4/6, 6/4, 7/4, 10YR 5/4, 5/6, 6/3, 6/4, or 6/6. Moist colors are 5YR 4/6, 5/6, 5/8, 7.5YR 3/4, 4/4, 4/8, 5/6, 5/8, 10YR 3/2, 4/3, 4/4, 4/6, 5/4, or 5/6. It is loam or clay loam, increasing by at least 3 percent clay over the horizon above. It has 35 to 75 percent gravel, and 0 to 15 percent cobbles.

Some pedons have a C horizon.

SKALAN FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, mixed, mesic family of Ultic Haploxeralfs. They have developed in material weathered from metasedimentary rock. They are on mountain sideslopes at elevations of 600 to 4,800 feet. Slopes range from 25 to 70 percent. These soils are well drained. Mean annual precipitation is about 70 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, near Hawkins Creek on Forest Service road 7N04, about 2 miles northwest of the junction with county road 402, on a south facing slope of 30 percent under Douglas-fir, tanoak, and madrone at 2,800 feet elevation; in the NE 1/4 of section 17, T. 6 N., R. 6 E., H.B.M.

0-.5 inch to 0; fresh and decomposing needle litter.

A-0 to 9 inches; light reddish brown (5YR 6/3) gravelly loam, yellowish red (5YR 4/6) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; 20 percent pebbles; strongly acid (pH 5.5); clear wavy boundary.

Bt1-9 to 19 inches; light reddish brown (5YR 6/4) very gravelly clay loam, yellowish red (5YR 5/6) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and coarse roots; common thin clay films on ped faces; 45 percent pebbles; strongly acid (pH 5.5); clear wavy boundary.

Bt2-19 to 25 inches; yellowish red (5YR 5/6) very gravelly clay loam, red (2.5YR 4/6) moist; moderate very fine and fine subangular blocky structure; hard,

firm, sticky and plastic; few very fine roots; continuous thin clay films on ped faces; 55 percent pebbles; medium acid (pH 5.7); clear wavy boundary.

Bt3-25 to 34 inches; reddish brown (2.5YR 5/4) clay loam, red (2.5YR 4/8) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and medium roots; continuous moderately thick clay films on ped faces and line pores; 10 percent pebbles; medium acid (pH 5.6); abrupt wavy boundary.

R-34 inches; fractured phyllite with some soil in cracks; fractures 3-4 cm apart.

Range in Characteristics: The depth to metasedimentary rock ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation is 40 to 60 percent in the upper 75 cm of the argillic horizon.

The A horizon is 5YR 6/3, 6/4, 7.5YR 5/4, 5/5, 6/4, or 6/5. Moist colors are 5YR 3/4, 4/4, 4/6, 7.5YR 4/3, or 4/4. It has 15 to 35 percent gravel. It is medium or strongly acid.

The Bt horizon is 2.5YR 5/4, 5/6, 5YR 5/4, 4/6, 6/6, 7.5YR 5/4, or 5.6. Moist colors are 2.5YR 4/6, 4/3, 5YR 5/4, 5/6, 7.5YR 5/4, 5/6, or 5/8. It increases in clay content by at least 1.2 times that of the above horizon and has 10 to 65 percent gravel. Clay content of the particle size control section is 27 to 35 percent.

SKINNER FAMILY, DEEP

These soils are deep phase members of the fine-loamy, mixed, mesic family of Typic Dystrochrepts. They have developed in material weathered from metasedimentary rock. They are on mountain sideslopes at elevations of 500 to about 3,500 feet. Slopes range from 25 to 50 percent. These soils are well to moderately well drained. Mean annual precipitation is about 105 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near the western Forest boundary on Forest Service road 13N15, about .3 mile from the junction with the Rocky Saddle-Klamath Glen Road, on a northwest facing slope of 40 percent under Douglas-fir, redwood, chinquapin, madrone, tanoak, salal, rhododendron, and evergreen huckleberry at 2,900 feet elevation; in the SW 1/4 of the NW 1/4 of section 11, T. 13 N., R. 2 E., H.B.M.

0-1/2 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 6 inches; very pale brown (10YR 7/4) gravelly loam, light yellowish brown (10YR 6/4) moist; moderate very fine to fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common coarse roots; 20 percent pebbles; strongly acid (pH 5.5); clear smooth boundary.

BA-6 to 22 inches; very pale brown (10YR 8/4) clay loam yellowish brown (10YR 5/4) moist; strong very fine to fine subangular blocky structure; slightly sticky and slightly plastic; few very fine, common fine and medium, few coarse roots; strongly acid (pH 5.5); gradual wavy boundary.

Bw-22 to 32 inches; pale yellow (2.5Y 7/4) gravelly

sandy clay loam, light olive brown (2.5Y 5/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine, medium and coarse roots; 15 percent pebbles; medium acid (pH 5.6); gradual wavy boundary.

C-32 to 56 inches; pale yellow (2.5Y 8/4) gravelly sandy loam, light yellowish brown (2.5Y 6/4) moist; weak very fine subangular blocky structure; few fine and medium roots; 20 percent pebbles; medium acid (pH 5.6); clean wavy boundary.

R-56 inches; fractured phyllite; fractures 2-4 cm apart.

Range in Characteristics: The depth to metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be 50°F. The soil between the depths of 4 and 12 inches is usually moist throughout from mid-October through August. The base saturation is about 10 percent between the depths of 10 and 30 inches.

The A horizon is 10YR 5/3, 6/4, or 7/4. Moist colors are 10YR 4/3, 4/4, or 6/4. It is loam or silt loam with 18 to 27 percent clay and 0 to 20 percent gravel. It is medium or strongly acid.

The Bw horizon is 2.5Y 7/4 7/2, 10YR 6/4, 7/4, or 8/4. Moist colors are 2.5Y 5/4, 6/6, 10YR 5/4, 5/6, or 5/7. It is silt loam, clay loam, or silty clay loam with 20 to 30 percent clay, not increasing in clay content by as much as 1.2 times that of the horizon above. It has 0 to 30 percent gravel.

Some pedons lack a C horizon.

SKYMOR FAMILY

These soils are members of the loamy-skeletal, mixed, frigid family of Dystric Lithic Xerochrepts. They have developed in material weathered from metasedimentary or metaigneous rock. They are on mountain sideslopes and ridges at elevations of 4,500 to 5,500 feet. Slopes range from 35 to 70 percent. These soils are well drained. Mean annual precipitation is about 80 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Humboldt County, California, near Board Camp Butte on the road that goes to the old lookout, about 1/4 mile west of the look out site on a south facing slope of 35 percent under scrub oak and annual grasses, with a few white fir and incense-cedar at 5,200 feet elevation; in the SE 1/4 of the NE 1/4 of section 23, T. 18 N., R. 5 E., H.B.M.

A-0 to 10 inches; grayish brown (10YR 5/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine, fine, and medium, few coarse roots; 15 percent pebbles; slightly acid (pH 6.2); gradual smooth boundary.

Bw-10 to 16 inches; light brownish gray (10YR 6/2) very gravelly loam, very grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, common fine, few medium and coarse roots;

40 percent pebbles, 10 percent cobbles and stones; slightly acid (pH 6.2); abrupt wavy boundary.

R-16 inches; fractured graywacke; fractures about 4-7 cm apart.

Range in Characteristics: The depth to metasedimentary or metaigneous rock ranges from 10 to 20 inches. The mean annual soil temperature is estimated to be 45°F, mean summer soil temperature is estimated to be 48°F, and the difference between the mean summer and mean winter soil temperatures is more than 5°C. The soil between the depths of 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation below 10 inches is estimated to be about 40 to 50 percent.

The A horizon is 10YR 4/2, 5/2, 5/3, 2.5Y 3/4, or 4/4. Moist colors are 10YR 3/2, 4/2, 4/3, 2.5Y 2/2, 3/3, or 4/3. Where colors are dark the horizon is too thin to be mollic or umbric. It has 10 to 40 percent gravel. It is slightly or medium acid.

The Bw horizon is 10YR 5/2, 6/2, 6/3, 2.5Y 6/2, or 6/4. Moist colors are

10YR 4/2, 4/3, 4/4, 2.5Y 5/3, 5/4, or 6/4. It has 35 to 50 percent

gravel and 0 to 10 percent cobbles and stones.

SKYMOR FAMILY, ULTRAMAFIC

These soils are ultramafic phase members of the loamy-skeletal, mixed, frigid family of Dystric Lithic Xerochrepts. They have developed in material weathered from ultrabasic rock. They are on mountain-sides and ridges at elevations of 3,800 to 6,000 feet. Slopes range from 35 to 75 percent. These soils are well to somewhat excessively drained. Mean annual precipitation is about 100 inches. Mean annual temperature is about 47°F.

Typical Pedon: Located in Del Norte County, California, on the road between Sanger Lake and Sanger Peak, approximately 1 mile north of Sanger Lake, about 50 feet below the road on a southwest facing slope of 50 percent under lodgepole pine, manzanita, huckleberry oak and a few Douglas-fir at 5,200 feet elevation; in the SE 1/4 of the NE 1/4 of section 32, T. 18 N., R. 4 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf litter.

A1-0 to 5 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine, few medium roots; 35 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-5 to 11 inches; brown (10YR 5/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, few coarse roots; 40 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bw-11 to 19 inches; yellowish brown (10YR 5/4) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium, and few coarse roots; 35 percent pebbles; slightly acid (pH 6.1); clear irregular boundary.

R-19 inches; fractured serpentinized peridotite; fractures 4 to 6 inches apart.

Range in Characteristics: The depth to ultrabasic rock ranges from 10 to 20 inches. The mean annual soil temperature is estimated to be about 45°F, the mean summer soil temperature is estimated to be about 48°F, and the difference between the mean summer and mean winter soil temperatures is more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation below 10 inches is estimated to be about 40 to 50 percent.

The A horizon has dry color of 10YR 5/2, 5/3, 5/4, 2.5Y 4/2, or 5/2; and moist color of 10YR 3/2, 4/2, 4/3, 2.5Y 3/3, 4/3, or 4/4. Where colors are dark the horizon is too thin to be mollic or umbric. It is loam or silt loam with 25 to 60 percent gravel. It is slightly or medium acid.

The Bw horizon has dry color of 10YR 5/2, 5/3, 6/3, 2.5Y 5/2, 5/3, 6/3, 2.5Y 5/2, or 6/2; and moist color of 10YR 4/2, 5/2, 5/3, 6/2, 2.5Y 4/2, 4/3, or 5/2. It has 35 to 70 percent gravel.

SOULAJULE FAMILY, DEEP

These soils are deep phase members of the clayey-skeletal, mixed, mesic family of Ultic Haploxeralfs. They have developed in place from sandstone, shale, or phyllite rock. They are on mountainsides at elevations of 2,000 to 4,800 feet. Slopes range from 5 to 35 percent. Typical vegetation consists mainly of Douglas-fir. The soils are well to moderately well drained. Mean annual precipitation is about 65 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Humboldt County, California, on Forest Service road 1N15, about 1.5 miles from Van Duzen River Road on a northeast facing slope of 35 percent under Douglas-fir, tanoak and madrone at 3,000 feet elevation; in the SW 1/4 of the SE 1/4 of section 2, T. 1 N., R. 5 E., H.B.M.

0-2 inches to 0; fresh and decomposing leaf and needle litter.

A1-0 to 8 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, sticky and plastic; many very fine and coarse roots; 20 percent pebbles; slightly acid (pH 6.4); clear wavy boundary.

A2-8 to 13 inches; brown (10YR 5/3) very gravelly clay loam, very dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; many very fine and coarse roots; 40 percent pebbles; slightly acid (pH 6.4); clear wavy boundary.

Bt1-13 to 18 inches; brown (10YR 5/3) extremely gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, very friable, sticky and plastic; common very fine and fine roots; 70 percent pebbles; neutral (pH 6.7); clear wavy boundary.

Bt2-18 to 38 inches; light yellowish brown (10YR 6/4) ex-

tremely gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; hard, very friable, sticky and plastic; many very fine and fine roots; common moderately thick clay films on ped faces and line pores; 60 percent pebbles; slightly acid (pH 6.3); clear wavy boundary.

Bt3-38 to 60 inches; light brown (7.5YR 6/4) extremely gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, very firm, sticky and plastic; many very fine and fine roots; common moderately thick clay films on ped faces and line pores; 80 percent pebbles; slightly acid (pH 6.4).

Range in Characteristics: Depth to sedimentary or metasedimentary rock ranges from 40 to more than 60 inches. The mean annual soil temperature is estimated to be between about 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation, by Hach kit, is 35 to 70 percent in the argillic horizon. Organic carbon content is assumed to be less than 0.7 percent.

The A horizon has dry color of 10YR 4/2, 5/3, 5/4, 6/2, 6/3, 2.5Y 6/2, or 6/4; and moist color of 10YR 3/2, or 3/3. It is loam or silt loam, with 10 to 40 percent gravel. It is slightly to strongly acid.

The Bt horizon has dry color of 7.5YR 6/4, 7/1, 7/2, 10YR 5/3, 5/4, 6/3, 6/6, 2.5Y 5/2, 6/2, 6/4, or 7/4; and moist color of 7.5YR 4/2, 4/4, 5/4, 5/6, 10YR 4/3, 4/4, 5/4, 2.5Y 3/2, 4/2, 5/4, 5/5, or 5/6. It is clay loam, silty clay loam, or clay, with 35 to 45 percent clay, and 35 to 70 percent gravel. It is neutral to strongly acid.

Some pedons have a C horizon.

TYPIC XEROFLUVENTS

Typic Xerofluvents soils are deep, well to excessively drained soils formed in mixed alluvial material deposited on river terraces and fans. Elevation ranges from 300 to 4,000 feet and slopes range from 2 to 10 percent. Precipitation is from 60 to 100 inches.

The A horizon is 2 to 18 inches thick. Dry and moist colors vary greatly due to the nature and amount of the depositional material. Textures range from silt loam to extremely gravelly or cobbly loamy sand.

Organic carbon content is assumed to be less than 1 percent.

The C horizon is 24 inches to 20 feet deep. Dry and moist colors vary greatly due to nature and amount of the depositional material. Textures range from silt loam to extremely gravelly or cobbly loamy sand.

Vegetation can be annual grasses, incense cedar, ponderosa pine, Jeffry pine, and Douglas-fir.

VOORHIES FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, mixed, mesic family of Typic Haploxeralfs. They have developed in material weathered from sedimentary and metasedimentary rock. They are on mountainsides at elevations of 2,000 to 4,800 feet. Slopes range from 40 to 85 percent. These soils are well drained. Mean annual precipitation is about 60 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Trinity County, California, on Browns Canyon Road (Forest Service road 1N10) about .5 mile west of the junction with Van Duzen River Road (County road 511), on a southwest facing slope of 65 percent under annual grasses, white and black oaks, and some Douglas-fir at 2,880 feet elevation; in the SE 1/4 of the SW 1/4 of section 32, T. 1 N., R. 6 E., H.B.M.

A-0 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate very fine subangular blocky structure; soft, friable, nonsticky and plastic; few very fine and fine roots; 20 percent pebbles; slightly acid (pH 6.2); diffuse wavy boundary.

Bt1-4 to 12 inches; very pale brown (10YR 7/4) gravelly loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and plastic; common fine and medium roots; few thin clay films line pores; 30 percent pebbles; slightly acid (pH 6.2); diffuse wavy boundary.

Bt2-12 to 26 inches; very pale brown (10YR 7/5) very gravelly clay loam, brown (10YR 5/3) moist; moderate fine to medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and medium, few coarse roots; common thin clay films line pores; 40 percent pebbles; slightly acid (pH 6.2); diffuse wavy boundary.

R-26 inches; fractured graywacke.

Range in Characteristics: Depth to sandstone or shale ranges from 20 to 40 inches. The mean annual soil temperature is estimated to be between about 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-July through mid-October, and moist throughout between November and April. The base saturation is assumed to be about 80 percent in the upper 75 cm of the argillic horizon.

The A horizon has dry color of 2.5YR 6/2, 6/3, 10YR 5/2, 6/2, or 6/3; and moist color of 2.5YR 4/2, 4/3, 10YR 4/2, or 4/3. It is loam or clay loam with 18 to 30 percent clay and 0 to 35 percent gravel. It is slightly or medium acid.

The Bt horizon has dry color of 2.5YR 6/2, 7/2, 10YR 7/4, or 7/5; and moist color of 2.5YR 4/2, 5/2, 10YR 4/2, 4/4, 5/3, or 5/4. It is clay loam with 30 to 40 percent clay and 35 to 60 percent gravel. The particle size control section has 27 to 35 percent clay.

Some pedons have a C horizon.

WALNETT FAMILY, DEEP, STONY

These soils are deep, stony phase members of the loamy-skeletal, oxidic, mesic family of Ultic Haploxeralfs. They have developed in material weathered from peridotite. They are on mountain sideslopes at elevations of 500 to 3,500 feet. Slopes range from 5 to 70 percent. These soils are well drained. Mean annual precipitation is about 105 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, near Holiday Mine off Holiday Road (County Road 315), about 3.7 miles from the junction with Old Gasquet Toll Road; pit is about 20 feet downslope from the road on a northeast facing slope of 40 percent under knobcone pine, huckleberry oak, California bay laurel, and tanoak at 2,940 feet elevation; in the SE 1/4 of the NW 1/4 of section 19, T. 18 N., R. 3 E., H.B.M.

0-1 inch to 0; fresh and decomposing leaf and needle litter.

A-0 to 4 inches; strong brown (7.5YR 5/6) very stony loam, strong brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; few very fine, fine, and coarse roots; 20 percent pebbles, 15 percent stones; medium acid (pH 5.9); clear smooth boundary.

Bt1-4 to 22 inches; strong brown (7.5YR 5/6) very gravelly clay loam, strong brown (7.5YR 4/4) moist; strong fine subangular blocky structure; hard, friable, sticky and plastic; few very fine, common fine, few coarse roots; 35 percent pebbles, 5 percent cobbles; common moderately thick clay films on ped faces and line pores; slightly acid (pH 6.1); gradual wavy boundary.

Bt2-22 to 42 inches; brownish yellow (10YR 6/6) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; hard, friable, sticky and plastic; few fine roots; few moderately thick clay films on ped faces and line pores; 35 percent pebbles, 10 percent cobbles

and stones; slightly acid (pH 6.1); gradual smooth boundary.

C-42 to 60 inches; yellow (10YR 7/6) very gravelly loam, yellowish brown (10YR 5/6) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; few fine roots; 50 percent pebbles, 5 percent cobbles and stones; slightly acid (pH 6.2).

Range in Characteristics: Depth to peridotite ranges from 40 to more than 60 inches. The mean annual temperature is estimated to be between about 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June to mid-October, and moist throughout between November and April. The base saturation, by Hach kit, is about 40 to 50 percent in the upper 75 cm of the argillic horizon. Surface stones range from 10 to 30 percent. The particle size control section has 27 to 35 percent clay content and 35 to 60 percent rock fragments.

The A horizon has dry color of 7.5YR 4/6, 5/6, 6/6, or 10YR 7/3; and moist color of 7.5YR 4/4, 4/6, 5/6, or 10YR 4/3. It is loam or clay loam with 10 to 40 percent gravel and 10 to 20 percent stones. It is neutral to medium acid.

The Bt horizon has dry color of 7.5YR 5/6, 6/6, 6/8, 7/6, 10YR 6/8, 7/3, or 7/4; and moist color of 7.5YR 4/4, 4/6, 5/6, 5/8, 10YR 4/6, 5/4, or 5/6. It is clay loam or silty clay loam, increasing in clay by at least 1.2 times more than the A horizon. It has 20 to 55 percent gravel and 10 to 30 percent cobbles or stones. It is neutral or slightly acid.

The C horizon has dry color of 7.5YR 5/6, 6/8, or 10YR 7/6; moist color of 7.5YR 5/8, or 10YR 5/6. It has 20 to 50 percent gravel and 5 to 20 percent cobbles or stones.

Additional Data: A grab sample for mineralogy was sent to the Lincoln Laboratory, 1979. Sample No. S79CA015-7.

WAPAL FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the sandy-skeletal, mixed, frigid family of Typic Xerorthents. They have developed in material weathered from diorite rock. They are on mountainsides and ridges at elevations of 4,500 to 6,000 feet. Slopes range from 35 to 65 percent. These soils are somewhat excessively drained. Mean annual precipitation ranges between about 80 and 100 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Humboldt County, California, on Forest Service road 10N02 approximately 4.5 miles from Middle Fork Mill Creek on a southwest facing slope of 35 percent under white fir, with some incense-cedar, *Ceanothus* sp., and thimbleberry at 5,500 feet elevation; in the NW 1/4 of the NW 1/4 of section 21, T. 9 N., R. 6 E., H.B.M.

0-2 to 0 inches; fresh and decomposing needle litter.

A-0 to 5 inches; dark yellowish brown (10YR 4/4) very gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; loose, nonsticky and nonplastic; 35 percent pebbles; strongly acid (pH 5.5); abrupt wavy boundary.

C1-5 to 17 inches; yellowish brown (10YR 5/6) extremely cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 50 percent pebbles, 20 percent cobbles; medium acid (pH 5.7); clear wavy boundary.

C2-17 to 35 inches; yellowish brown (10YR 5/6) extremely cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 50 percent pebbles, 30 percent cobbles; medium acid (pH 5.7).

R-35 inches; weathered diorite.

Range in Characteristics: The depth to diorite rock ranges from about 20 to 40 inches. The mean annual soil temperature is estimated to be less than 46°F. The mean summer soil temperature is estimated to be between 48 and 40°F and the difference between the mean summer and mean winter soil temperatures is estimated to be more than 9°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June to mid-October and moist throughout between November and April. The base saturation is estimated to be 60 to 70 percent between the depths of 25 and 75 cm. Surface rock fragments range from 10 to 50 percent.

The A horizon has dry color of 10YR 3/2, or 4/4; and moist color of 10YR 2/2, 3/4, or 4/4. Where colors are dark, the horizon is too thin to be mollic. It is loam or sandy loam with 20 to 40 percent gravel and 0 to 20 percent cobbles.

The C horizon has dry color of 10YR 4/4, 5/4, or 5/6; and moist color of 7.5YR 4/2, 10YR 4/3, or 4/4. It is loamy sand with 35 to 60 percent gravel and 10 to 40 percent cobbles.

WEITCHEPEC FAMILY, MODERATELY DEEP

These soils are moderately deep phase members of the loamy-skeletal, serpentinitic, mesic family of Typic Xerochrepts. They have developed in material weathered from serpentinized ultrabasic rock. They are on mountainsides at elevations of 400 to 4,500 feet. Slopes range from 30 to 70 percent. These soils are well drained. Mean annual precipitation ranges from about 80 to 100 inches. Mean annual temperature is about 50°F.

Typical Pedon: Located in Del Norte County, California, approximately .75 miles west of Camp-6 Lookout on county road 411, on an east facing slope of 20 percent under huckleberry oak, manzanita, red huckleberry, common juniper, squaw carpet and bear grass, with a few Douglas-fir and Jeffrey pine at 3,650 feet elevation; in the SW 1/4 of the SE 1/4 of section 25, T. 17 N., R. 3 E., H.B.M.

A-0 to 8 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; weak very fine and fine granular structure; slightly hard, firm, non-sticky and nonplastic; common fine, many medium, and few coarse roots; 25 percent pebbles; medium acid (pH 5.8); gradual wavy boundary.

Bw1-8 to 30 inches; light yellowish brown (10YR 7/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; moderate very fine subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; common very fine and fine, few medium and coarse roots; 70 percent pebbles; medium acid (pH 5.9); gradual wavy boundary.

Bw2-30 to 35 inches; brownish yellow (10YR 6/6) very

gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak very fine subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; few fine and medium roots; 35 percent pebbles, 10 percent cobbles and stones; medium acid (pH 5.9);

R-35 inches; fractured serpentine; fractures 2 to 4 inches apart.

Range in Characteristics: The depth to serpentinized rock ranges from about 20 to 40 inches. The mean annual soil temperature is estimated to be 50 to 59°F. The soil between the depths of about 8 and 24 inches is usually dry in all parts from mid-June through mid-October and moist throughout from November to April. The base saturation is estimated to be 60 to 70 percent between the depths of 25 and 75 cm.

The A horizon has dry color of 10YR 5/3, 6/3, 6/4, or 7/3; and moist color of 10YR 4/2, 4/3, 5/2, 5/3, or 6/2. It is loam, silt loam, or clay loam, with 20 to 30 percent clay and 10 to 35 percent gravel. It is neutral to medium acid.

The Bw horizon has dry color of 10YR 5/4, 6/4, 6/6, 7/4, 2.5Y 7/4, or 8/4; and moist color of 10YR 4/4, 5/4, 5/6, 2/5Y 5/4, or 5/6. It is silt loam, clay loam, or silty clay loam, with 20 to 30 percent clay, not increasing in clay content by as much as 1.2 times that of the A horizon. It has 35 to 50 percent gravel and 0 to 10 percent cobbles and stones.

Some pedons have a C horizon.

WOODSEYE FAMILY

These soils are members of the loamy-skeletal, mixed, frigid family of Lithic Xerumbrepts. They have developed in material weathered from metasedimentary rock. They are on mountainsides and broad ridges at elevations of 4,500 to 5,500 feet. Slopes range from 5 to 70 percent. These soils are well to somewhat excessively drained. Mean annual precipitation ranges from about 70 to 105 inches. Mean annual temperature is about 48°F.

Typical Pedon: Located in Trinity County, California, near Grizzly Mountain, on Forest Service road 2517, 1.1 miles east of the junction with Forest Service road 2508; pit is about 10 feet upslope from road on a north facing slope of 55 percent under white and red fir, with some Ribes sp. and snowbrush at 5,200 feet elevation; in the NE 1/4 of the NE 1/4 of section 34, T. 2 S., R. 6 E., H.B.M.

0-1 inch to 1; fresh and decomposing needle litter.

A-0 to 8 inches; yellowish brown (10YR 5/4) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; 20 percent pebbles; slightly acid (pH 6.2); clear smooth boundary.

Bw-8 to 14 inches; yellowish brown (10YR 5/6) extremely

gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine, and few medium roots; 60 percent pebbles; medium acid (pH 6.0).

R-14 inches; fractured metasedimentary rock; fractures are 4 to 6 inches apart.

Range in Characteristics: The depth to metasedimentary rock ranges from 12 to 20 inches. The mean annual soil temperature is estimated to be 45°F, the mean summer soil temperature is estimated to be 48°F, and the difference between the mean summer and mean winter soil temperatures is more than 9°F. The soil between the depths of 8 and 20 inches is usually dry in all parts from mid-June through mid-October, and moist throughout between November and April. The base saturation in the epipedon ranges from 30 to 40 percent.

The A horizon has dry color of 10YR 3/3, 4/3, 4/4, or 5/4; and moist color of 10YR 2/1, 3/1, 3/2, or 3/3. It has 5 to 35 percent gravel. It is slightly or medium acid.

The Bw horizon has dry color of 10YR 4/3, 4/4, 5/4, 5/6, 6/4, 2.5Y 5/4, or 6/4; and moist color of 10YR 3/2, 3/3, 4/2, 4/3, 4/4, 2.5Y 4/2, or 4/4. It has 35 to 60 percent gravel. It is medium or strongly acid.

XEROCHREPTS

Xerochrepts soils consist of shallow to deep well drained soils formed in residual and colluvial material weathered from metasedimentary and metaigneous rocks. They are on mountainsides and colluvial mountainsides at elevations of 2,500 to 4,000 feet. Slopes range from 30 to 70 percent. Annual precipitation is 70 to 100 inches. The mean annual soil temperature is 50 to 59 degrees F. The soils are usually dry from late June to mid-September, and moist the rest of the year.

The shallow soils are 20 inches or less to a paralithic contact. They are usually on the steeper slopes of 50 to 70 percent. They have an A horizon that is 3 or 4 inches thick. It is loam or gravelly sandy loam and averages 10 to 35 percent rock fragments. A weak B horizon is about 6 to 13 inches thick. It is gravelly loam, very gravelly loam, or gravelly clay

loam and averages 15 to 55 rock fragments. In some pedons a thin C horizon is present.

The colluvial soils are over 60 inches deep and can be up to 10 feet deep. They are usually on the lesser slopes, 30 to 50 percent. The A horizon is 4 or 5 inches thick. It is gravelly loam, gravelly sandy loam, or very gravelly sandy loam and averages 25 to 65 percent rock fragments. The B horizon is very cobbly sandy loam or very cobbly loam and averages 35 to 80 percent rock fragments. The C horizon or colluvial sediments are very cobbly, extremely cobbly or very stony loamy sand or sandy loam and averages 50 to 90 percent rock fragments.

Vegetation varies from dense Douglas-fir stands to Jeffrey pine-grass cover.

Classification, Genesis, and Morphology

Classification

The soil classification system of the National Cooperative Soil Survey is presented in Soil Taxonomy (Soil Survey staff, 1975). This system is comprehensive, in that it covers the soils of the world in a way pertinent to understanding their most fundamental differences and similarities and their genetic relationships (including soil-landscape, soil-vegetation, and soil-climate relationships) as well as their geographic distribution. The soil taxonomy provides defined classes at six categorical levels (order, suborder, great group, subgroup, family, and series). Classification at lower levels is coordinated with classification at all higher levels. That is, there is a consistent class-subclass relationship between categories.

The soils of the Six Rivers National Forest have been classified at the family level. Soil characteristics important to the use and management of the soil that are not taken into account in the definitions of the families are used as a basis for phases (management oriented subdivisions) of families.

The complete formal family names are long and complicated (e.g., Dystric Lithic Xerochrepts, loamy, mixed, mesic). The names of extensive or representative soil series are used as common names (e.g., Maymen family). The common names are used in this report as a basis for naming soil mapping units and their components.

Table 8 shows how the soils of the Forest have been classified. At the highest level, the soils have been divided into four orders: Alfisols, Entisols, Inceptisols, and Ultisols. The table lists great groups as the next subdivision but the suborders (Xeralfs, Orthents, Ochrepts, Umrepts, Humults, Udults, and Xerults) are indicated by the last two syllables of the great group names. Modifiers (such as Lithic Mollic) are added to the great group names to form subgroup names (such as Lithic Mollic Haploxeralfs). Finally, the families are named by using additional modifiers (e.g., loamy, serpentinitic, mesic) which indicate particle size, mineralogy, and soil temperature regime.

The classification is based on the morphology and other characteristics of the soils resulting from genetic processes, as discussed in the following sections.

Genesis

Soils of the Six Rivers National Forest formed under climatic conditions that promote leaching of salts and

exchangeable bases (calcium, magnesium, potassium, and sodium cations), accumulation of organic matter, movement of clay from surface to subsoil layers, and formation of clay by weathering of minerals in the bedrock and other geologic deposits.

Precipitation is relatively high but in nearly all parts of the Forest there is a distinct summer dry season. Length of the summer season too dry for plant growth tends to be greatest at lower elevations, and on southfacing slopes where high temperatures promote evapotranspiration, but varies greatly according to the moisture storage capacity of the soils.

Temperatures are moderate to cool, depending on elevation. The length of the season of winter temperatures too cool for plant growth increases with elevation.

The climate tends to support coniferous forest vegetation, but vegetation types more resistant to moisture stress are common. Much of the precipitation falls when temperatures are too cool for high levels of plant intake so a high proportion of the moisture is available for leaching and weathering of the soils.

Organic matter accumulates relatively quickly. After a few hundred years, or less, the content of organic matter tends to stabilize, as the losses from decomposition balance the additions from the vegetation. Cool temperatures (at higher elevations), short summer dry season (in the most humid zone), and vigorous forest growth (on the soils with the highest moisture storage capacity) favor high levels of organic matter content, and dark colors of surface horizons. Soils of the Forest have surface horizons with moderate to dark colors, and moderate to very high amounts of organic matter.

Leaching is partially offset by the return of exchangeable calcium, potassium, and magnesium to the soil surface through vegetative nutrient cycling. Nevertheless, the net effect is progressive leaching leading to complete removal of salts and exchangeable bases. Salts, including carbonates, have been leached from even the youngest soils of the Forest. The extent of removal of exchangeable bases varies widely depending largely on the age and nature of the soil materials. Some soils retain moderate levels of exchangeable bases throughout. Some have low levels (higher pH) in the lower part. Other soils have been highly depleted of bases to great depth.

Over long periods of time, water moving downward through the soils of the Forest tends to move clay particles from upper to lower parts of the solum. Clay tends to accumulate in subsoil layers. Favorable conditions and much time are required for a marked effect.

TABLE 8. Families Classified in the Soil Taxonomy.

ORDER	GREAT GROUP	SUBGROUP	FAMILY	SOIL NAME
ALFISOLS	Haploxeralfs	Mollic Haploxeralfs Typic Haploxeralfs Ultic Haploxeralfs	fine, serpentinitic, mesic loamy-skeletal, mixed, mesic loamy-skeletal, mixed, mesic clayey-skeletal, mixed, mesic clayey-skeletal, serpentinitic, mesic fine-loamy, mixed, mesic fine, mixed, mesic loamy-skeletal, micaceous, frigid loamy-skeletal, mixed, mesic loamy-skeletal, oxidic, mesic fine, mixed, mesic	*Madden family Hecker family Voorhies family Soulajule family Ishi Pishi family Holland family Melbourne family *Albus family Skalan family *Walnett family Cotati family
	Palexeralfs	Ultic Palexeralfs		
ENTISOLS	Xerorthents	Typic Xerorthents	loamy-skeletal, mixed, non-acid, mesic sandy-skeletal, mixed, frigid	**Raisio family Wapal family
INCEPTISOLS	Dystrochrepts	Lithic Dystrochrepts Typic Dystrochrepts	loamy, mixed, mesic fine-loamy, mixed, mesic loamy-skeletal, mixed, mesic	Holyoke family Skinner family Chenango family
	Xerochrepts	Dystric Lithic Xerochrepts	loamy, mixed, mesic loamy-skeletal, mixed, mesic loamy-skeletal, mixed, frigid coarse-loamy, mixed, frigid coarse-loamy, mixed, mesic fine-loamy, micaceous, frigid fine-loamy, mixed, mesic	Maymen family Deadwood family Skymor family Rogue family Chaix family *Race family Hugo family

*Family name based on proposed series.

**This is a taxadjunct. Raisio is classified Entic Ultic Haploxeralfs, loamy-skeletal, mixed, mesic.

TABLE 8. Families Classified in the Soil Taxonomy. (continued)

ORDER	GREAT GROUP	SUBGROUP	FAMILY	SOIL NAME
INCEPTISOLS (continued)	Xerochrepts (continued)	Dystric Xerochrepts (continued)	fine, oxidic, mesic loamy-skeletal, mixed, frigid loamy-skeletal, mixed, mesic	*Jayel family Althouse family Clallam family
	Xerumbrepts	Lithic Xerochrepts Typic Xerochrepts Vertic Xerochrepts Lithic Xerumbrepts Pachic Xerumbrepts Typic Xerumbrepts	loamy, serpentinitic, mesic loamy-skeletal, serpentinitic, frigid loamy-skeletal, serpentinitic, mesic fine, montmorillonitic, thermic loamy-skeletal, mixed, frigid coarse-loamy, mixed, frigid fine-loamy, mixed, mesic fine-loamy, mixed frigid fine-loamy, mixed, mesic loamy-skeletal, mixed, frigid loamy-skeletal, mixed, mesic	*Oragan family Hungry family Weitchpec family *Oxalis family Woodseye family *Deadman family Doty family Bins family Hullt family Nanny family Coyata family
ULTISOLS	Haplohumults	Xeric Haplohumults	clayey, Oxidic, mesic fine-loamy, mixed, mesic	Aiken family Horseshoe family
	Hapludults	Typic Hapludults	clayey, kaolinitic, mesic loamy-skeletal, mixed, mesic	Elioak family Hartleton family
	Haploxerults	Typic Haploxerults	clayey, oxidic, mesic fine-loamy, mixed, mesic loamy-skeletal, mixed, mesic	*Gasquet family Goldridge family *Kistirn family

*Family name based on proposed series.

Very long periods of time are required to weather most of the rock materials in the Forest. Ultrabasic rock material seems to yield clay somewhat more readily than the others. Moisture promotes weathering so that south-facing soils, and soils with low moisture capacity in the driest precipitation zones, have the least tendency for clay formation. Clay in many soils has not formed by weathering in the present landscape, but has been inherited from sedimentary or metasedimentary rocks that contained clay formed in ancient environments. These genetic processes require time. Except for the relatively quick accumulation of organic matter, relative stability of the land surface is necessary for significant results from these processes. Geologic erosion has removed materials from many of the soils of the Forest at a rate sufficient to reduce or eliminate the effects of leaching, clay movement, and clay formation. Deposition of fresh sediments on the floor plains of the valley bottoms also counterbalances these processes.

Morphology

In the soil taxonomy, key combinations of soil characteristics have been defined and named as diagnostic horizons. Other key characteristics not comprehended by the diagnostic horizons have been used in the system also.

On the Six Rivers National Forest, two surficial diagnostic horizons have been recognized. The umbric epipedon is a diagnostic horizon at least 10 inches thick, with relatively dark colors and high organic matter content, and relatively low levels of exchangeable bases. The ochric epipedon is a surficial horizon that fails to meet all the requirements for umbric epipedon (and for all the other epipedons not represented on the Forest). Of the suborders (listed in the section on classification), Umbrepts require umbric epipedon; Ochrepts and Orthents require ochric epipedon; Xeralfs, Humults, Udults, and Xerults may have either umbric or ochric epipedon. Pachic Xerumbrepts have particularly thick umbric epipedons. Within the Ultisol order, the Humults have amounts of organic matter considerably higher than the minimum

amount required for Umbrepts in general, or for Pachic Xerumbrepts in particular.

Cambic and argillic horizons are the two diagnostic subsoil horizons that have been recognized in the soils of the Forest. The cambic horizon is a leached, weathered subsoil layer not enriched by the accumulation of clay. The argillic horizon shows evidence of significant accumulation of clay. The soils of the Forest that lack subsoil diagnostic horizons are classified as Entisols. Those with cambic horizon are classified as Inceptisols and those with argillic horizons as either Alfisols or Ultisols. Ultisols have been more strongly and deeply leached of exchangeable bases than Alfisols. Among the Alfisols, Ultic Haploxeralfs have been more strongly leached than Typic Haploxeralfs. Among the Inceptisols, Dystrochrepts and Xerumbrepts have been more strongly leached than Xerochrepts.

The moisture content and temperature of the soils are important soil characteristics. Soils of the Forest that are dry for relatively short periods in the summer are considered to have udic moisture regime. Soils with pronounced summer dryness have xeric moisture regime; cooler soils at higher elevations have frigid temperature regime.

The content of rock fragments, the clay content, and the soil depth are important for their influence on soil moisture storage capacity, water movement, nutrient supply, and other soil functions. Soils with high content of rock fragments (more than 35 percent by volume in the control section) are called skeletal. Sandy and coarse-loamy soils have less than 18 percent clay in the control section. Fine-loamy soils have between 18 and 35 percent clay. Depth to bedrock is greater than 40 inches, from 20 to 40 inches, and less than 20 inches, in deep, moderately deep, and shallow (or lithic) soils, respectively.

The relationship among the soils of the Forest with respect to the morphological features discussed above are shown in Table 9.

TABLE 9. Relationships of Soil Families to Particle Size, Rock Composition, Moisture, Temperature, and Depth.

Rocks Soil Derived From	Mois- ture Regime	Tempera- ture Regime	Soil Depth	Soil Order	Non-Skeletal			Skeletal	
					<18% clay	18-35% clay	>35% clay	<35% clay	>35% clay
Acidic to Basic Composition	Udic	Mesic	Deep	Inceptisols	Chaix	Skinner	Elioak	Chenango	Soulajule
	Xeric	Mesic	Shallow	Ultisols		Holyoke	Melbourne Cotati	Hartleton	
			Deep	Inceptisols		Doty Hullt Hugo Holland		Coyata	
				Inceptisols -umbric				Clallam	
	Xeric	Frigid		-ochric Alfisols		Horseshoe Goldridge	Aiken	Skalan Hecker Kistirn	
				-mollic Ultisols					
			Moderately deep	Entisols Inceptisols Alfisols		Hugo		Raisio Clallam Voorhies Skalan Deadwood	
			Shallow Deep	Inceptisols Inceptisols -umbric -ochric Alfisols		Maymen			
			Moderately deep	Entisols Inceptisols -umbric		Bins Race		Nanny Althouse Albus	
			Shallow	Inceptisols -ochric -umbric Inceptisols				Wapal Nanny	
	Xeric	Thermic	Deep	Inceptisols	Woodseye		Oxalis	Skymor	
Ultrabasic Rocks	Xeric	Mesic	Deep	Alfisols		Oragran	Gasquet	Walnett	Ishi Pishi
	Xeric	Frigid	Moderately deep	Ultisols			Madden Jayel	Weitchpec	
			Shallow Deep	Inceptisols Inceptisols Inceptisols				Hungry	

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Glossary

Association, soil. A group of soils geographically associated in a characteristic repeating pattern.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 40 percent silt.

Cobble. A rock fragment 3 to 10 inches in diameter.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Consistence, soil. The feel of the soil and the ease with which a ped can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a “wire” when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Depth classes, soil.

Shallow	<20 inches
Moderately deep	20–40 inches
Deep	40 + inches

Drainage class (natural). Refers to the conditions of, frequency, and duration of periods of saturation, or partial saturation that existed during the development of the soil. This is as opposed to altered drainage, which is commonly the result of artificial drainage, or irrigation, but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in, or immediately beneath, the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time. Some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods, are light gray, and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Gravel. A rock fragment, 2 mm to 3 inches in diameter.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Munsell notation. A system for designating color by degrees of the three simple variables – hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: very slow, slow, moderately slow, moderate, moderately rapid, rapid, and very rapid.

Phase, soil. A subdivision of a soil, series, or other unit in the soil classification system made because of differences in the soil that affect its management but do not affect its classification.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or “sour” soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the

characteristics of the material in these horizons are unlike those of the underlying material. The living roots, and other plant and animal life characteristic of the soil, are largely confined to the solum.

Stones. Rock fragments greater than 10 inches in diameter if rounded, and greater than 15 inches along the longer axis if flat.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principle forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. Structureless soils are either single grain (each grain by itself, as in dune sand) or massive (the particles adhering

together without any regular cleavage, as in many claypans and hardpans).

Subgrade (engineering). The substratum, consisting of in-place material or fill material, that is prepared for highway construction; does not include stabilized base course or actual paving material.

Subsoil. Technically, the B horizon; roughly, the part of the solum below the A horizon.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

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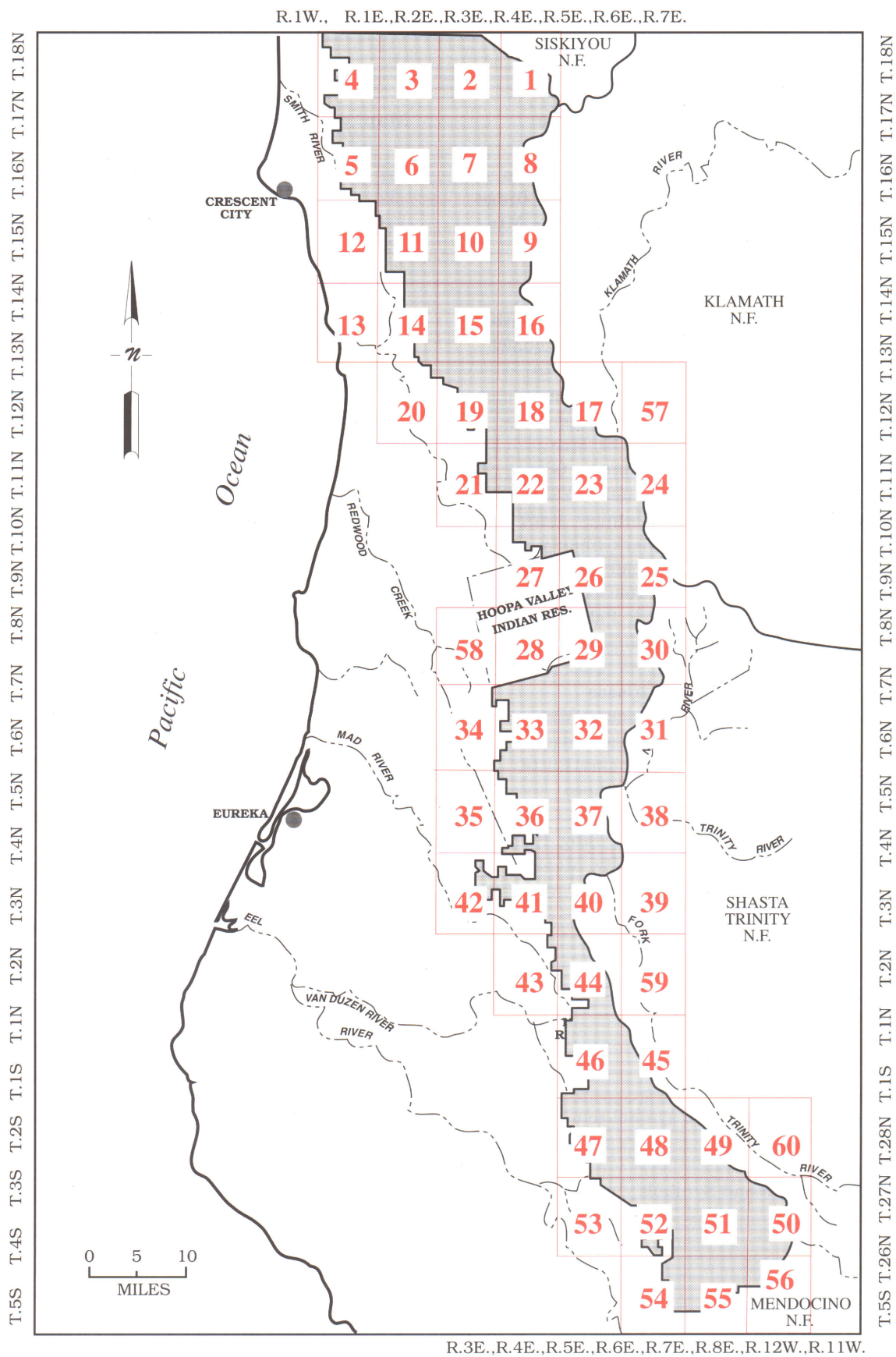
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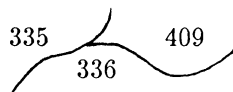
Map Sheet Cross Index

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3	739-2C	High Plateau Mtn.	33	670-2C	Willow Creek
4	740-1C	High Divide	34	671-1C	Lord-Ellis Summit
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6	739-3C	Gasquet	37	670-4C	Hennessy Peak
7	739-4C	Hurdygurdy Butte	38	669-3C	Ironside Mtn.
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27	687-2C	Weitchpec	57	703-2C	Somes Bar
28	687-3C	Hoopa	58	688-4C	Coyote Peak S.E.
29	687-4C	Tish Tang Point	59	651-3C	Hyampom
30	687-3C	Trinity Mtn.	60	632-3C	Pony Buck Peak W.

Special Symbols Legend

Wet Meadow  (each symbol represents 10 acres)

Soil Delinations and Symbols

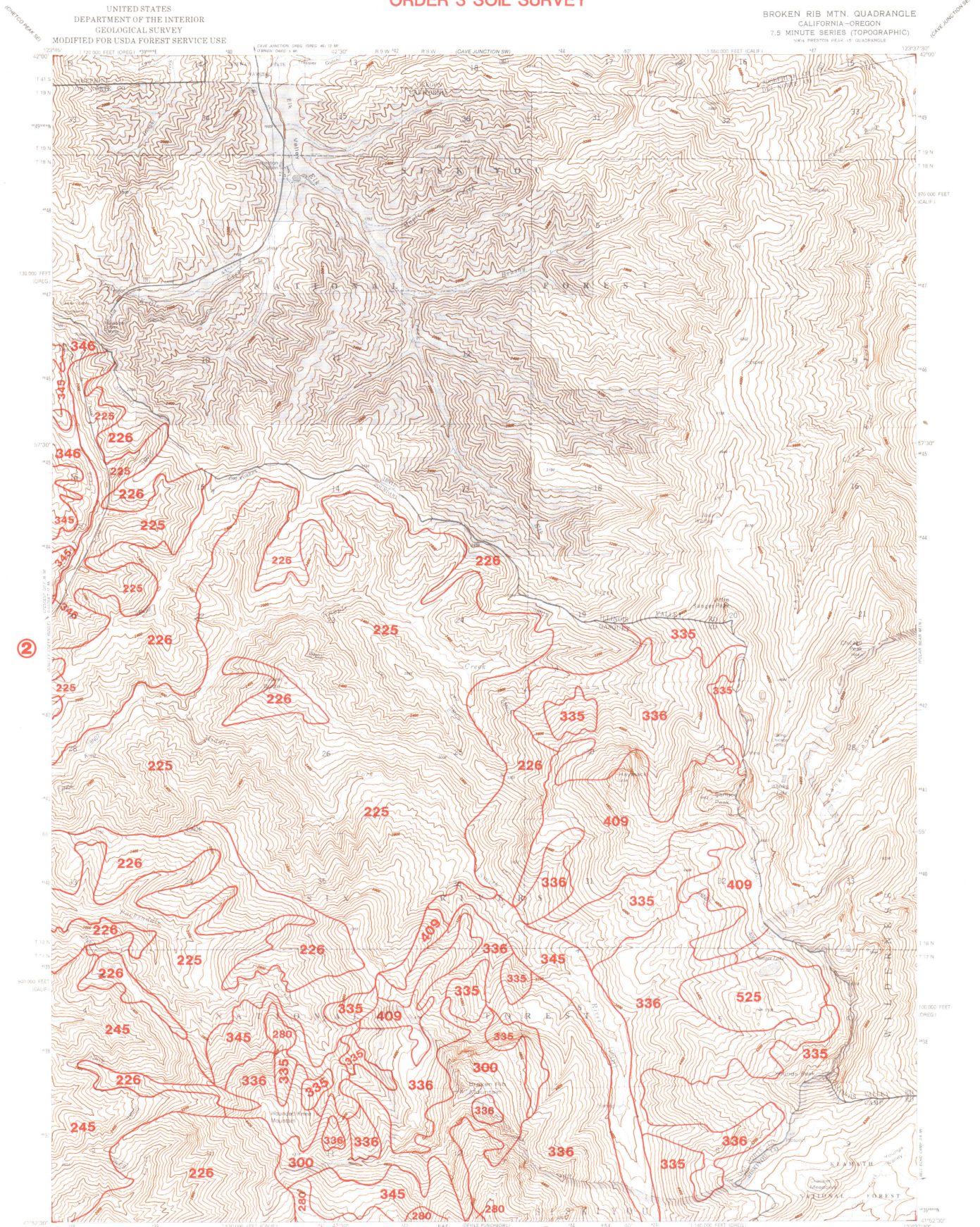


SIX RIVERS NATIONAL FOREST

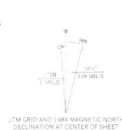
ORDER 3 SOIL SURVEY

BROKEN RIB MTN. QUADRANGLE
CALIFORNIA-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
NAD 1983 DATUM
1:50,000 SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOAA
Topography by photogrammetric methods from aerial photographs
taken 1939, revised checked 1967. Map dated 1968.
Projection: Conforms coordinate system, zone 10
Lambert conformal conic
1:50,000 scale based on California coordinate system,
zone 10 and Conus coordinate system, zone 10
1927 North American Datum
T-14 zone on the previous North American Datum 1983
move the projection west 21' makes north and
36 meters said as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
USGS correction grid furnished by the FS Pacific Southwest Region
Landsat revised according to additional Forest Service evidence



- CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1989
- LEGEND
- National Forest Boundary
 - Altered land within the National Forest Boundary
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Projection
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Road
 - Forest Trail
 - Locked Gate

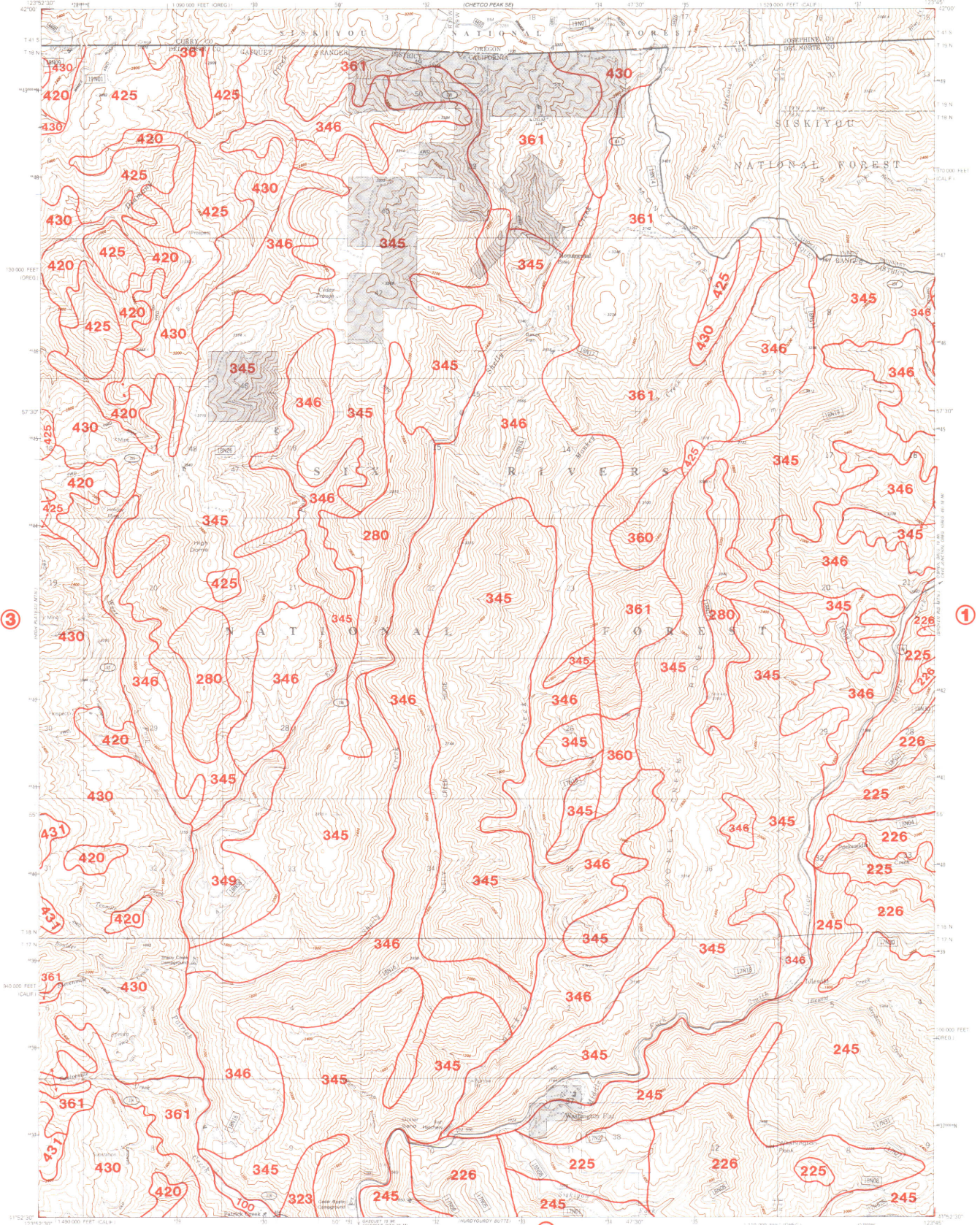
SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

BROKEN RIB MTN. CALIF-OREG.
NAD 1983 DATUM
1:50,000 SCALE
1982
REVISED 1984
738-2C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

SHELLY CREEK RIDGE QUADRANGLE
CALIFORNIA-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
1:62,500 SCALE

UNITED STATES
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GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NGA
Topography by photogrammetric methods from aerial
photographs taken 1975. Field checked 1977. Map dated 1982
Projection: California coordinate system, zone 1
Lambert conformal conic
1:62,500-foot grid ticks based on California coordinate system,
zone 1 and Oregon coordinate system, south zone
100-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
75: based on the predicted North American Datum 1983
75: based on the projection lines 21 meters north and
27 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geometrics Service Center, from 1982 aerial photography and
1984 correction gridlines furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Projection

LEGEND
Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Road, Location Approximate
Trail, Location Approximate

U.S. Highway
State Highway
County Road
Forest Trail
Locked Gate



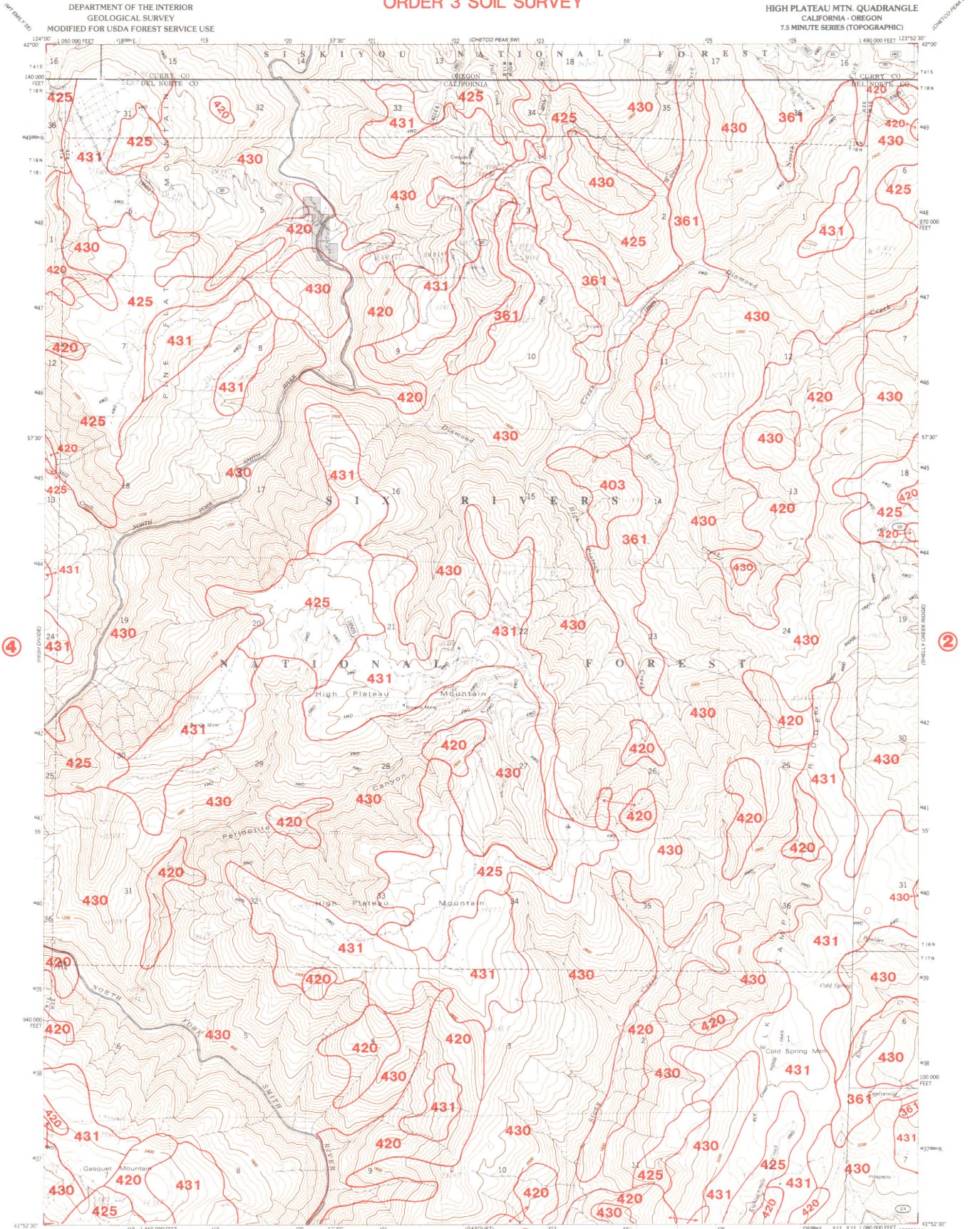
SHELLY CREEK RIDGE, CALIF.-OREG.
1:62,500 SCALE
1982
REVISED 1984

739-1C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

HIGH PLATEAU MTN. QUADRANGLE
CALIFORNIA - OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA
Compiled from aerial photographs taken 1975
Field checked 1977. Map edited 1982
Projection Lambert Conformal Conic
Grid: 1000-Meter Universal Transverse Mercator Zone 10
10,000-foot state grid ticks Calif. zone 1 & Ore. S zone
Vertical datum National Geodetic Vertical datum of 1929
Horizontal datum 1927 North American datum
To place on the predicted North American datum of 1983,
Move the projection lines as shown by dashed corner ticks
(31 meters north/97 meters east)
Modification to USGS base map by the USDA Forest Service,
Geospatial Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



Legend:
National Forest Boundary
Alienated Land within the National Forest Boundary
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

Legend:
Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Road, Location Approximate
Trail, Location Approximate

Legend:
U.S. Highway
State Highway
County Road
Forest Road
Forest Trail
Locked Gate

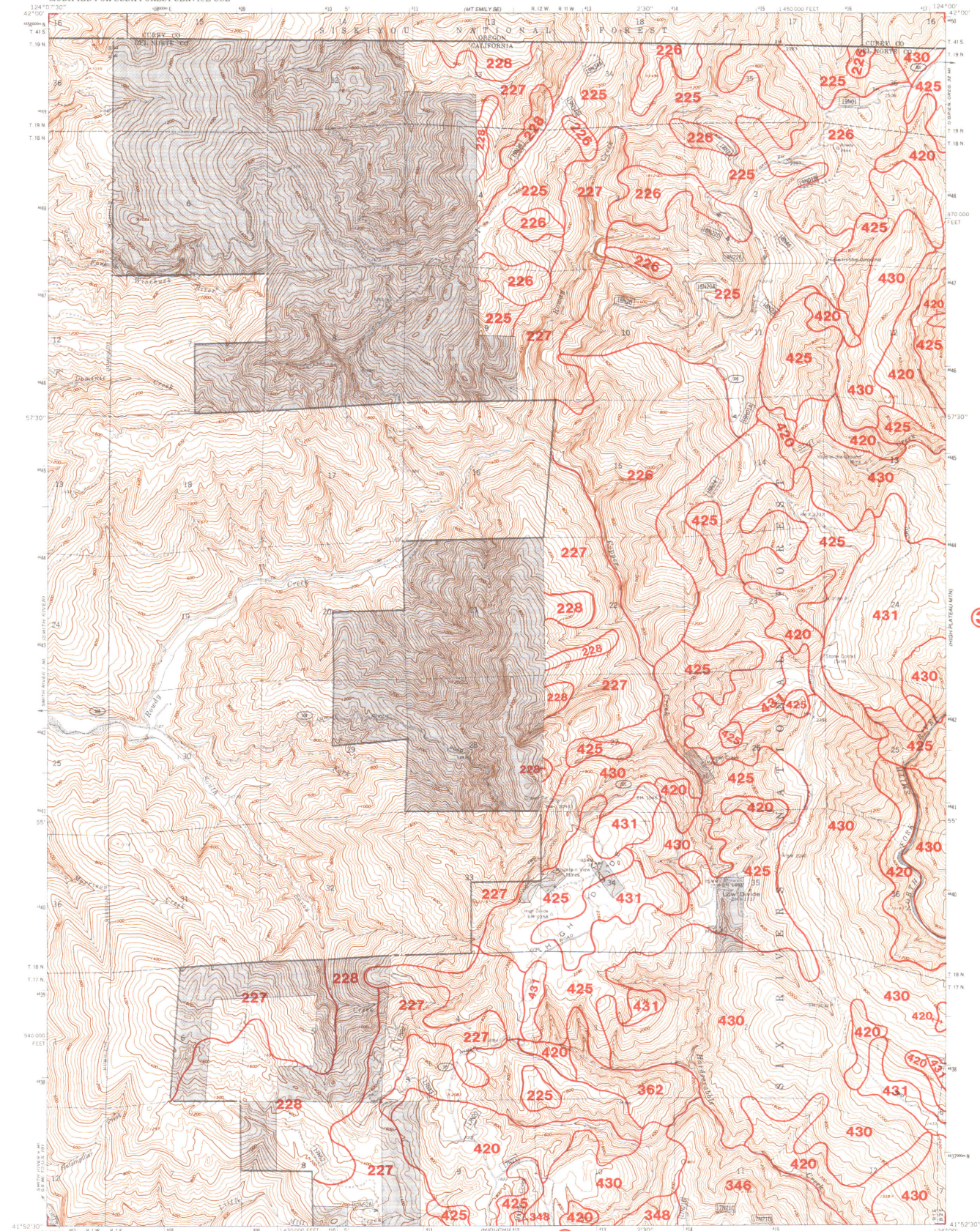


HIGH PLATEAU MTN., CALIF. - OREG.
PROVISIONAL EDITION 1982
REVISED 1984
739-2C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

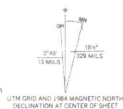
HIGH DIVIDE QUADRANGLE
CALIFORNIA-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
NEW CRESCENT CITY 15 QUADRANGLE



③

4

Base map prepared by the U.S. Geological Survey
Control by USGS and USCAGS
Topography by photogrammetric methods from aerial
photographs taken 1964. Field checked 1966.
Projections: 1927 North American datum
10,000-foot grid based on California coordinate system; zone 1
100,000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue.
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region.
Landmark revised according to additional Forest Service evidence.



- CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL
- LEGEND
- National Forest Boundary
 - Surveyed Land within the National Forest Boundary
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Protraction
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Road
 - Forest Trail
 - Locked Gate



HIGH DIVIDE, CALIF.-OREG.
NEW CRESCENT CITY 15 QUADRANGLE
N 41°52'30"-W 124°00'00" E
1966
REVISED 1984
740-1C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

GASQUET QUADRANGLE
CALIFORNIA - DEL NORTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW-4 GASQUET 17 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs

after 1976. First checked 1977. Map edited 1981

Projection and 101000000 grid rock. California coordinate

system, zone 11. Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

100 meter Universal Transverse Mercator grid, zone 10

UTM GRID AND 1984 MAGNETIC NORTH

REDUCTION AT CENTER OF SHEET

UTM GRID AND 1984 MAGNETIC NORTH

REDUCTION AT CENTER OF SHEET

UTM GRID AND 1984 MAGNETIC NORTH

REDUCTION AT CENTER OF SHEET

UTM GRID AND 1984 MAGNETIC NORTH

REDUCTION AT CENTER OF SHEET

UTM GRID AND 1984 MAGNETIC NORTH

REDUCTION AT CENTER OF SHEET



National Forest Boundary	Primary Highway
Allocated Land within the National Forest Boundary	Secondary Highway
Surveyed, Location Reliable	Improved Light Duty
Surveyed, Location Approximate	Unimproved Dirt
Unsurveyed, Protection	Trail
	Road, Location Approximate
	Trail, Location Approximate



GASQUET, CALIF.
SW-4 GASQUET 17 QUADRANGLE
NAT45-V1235 5/15

1981

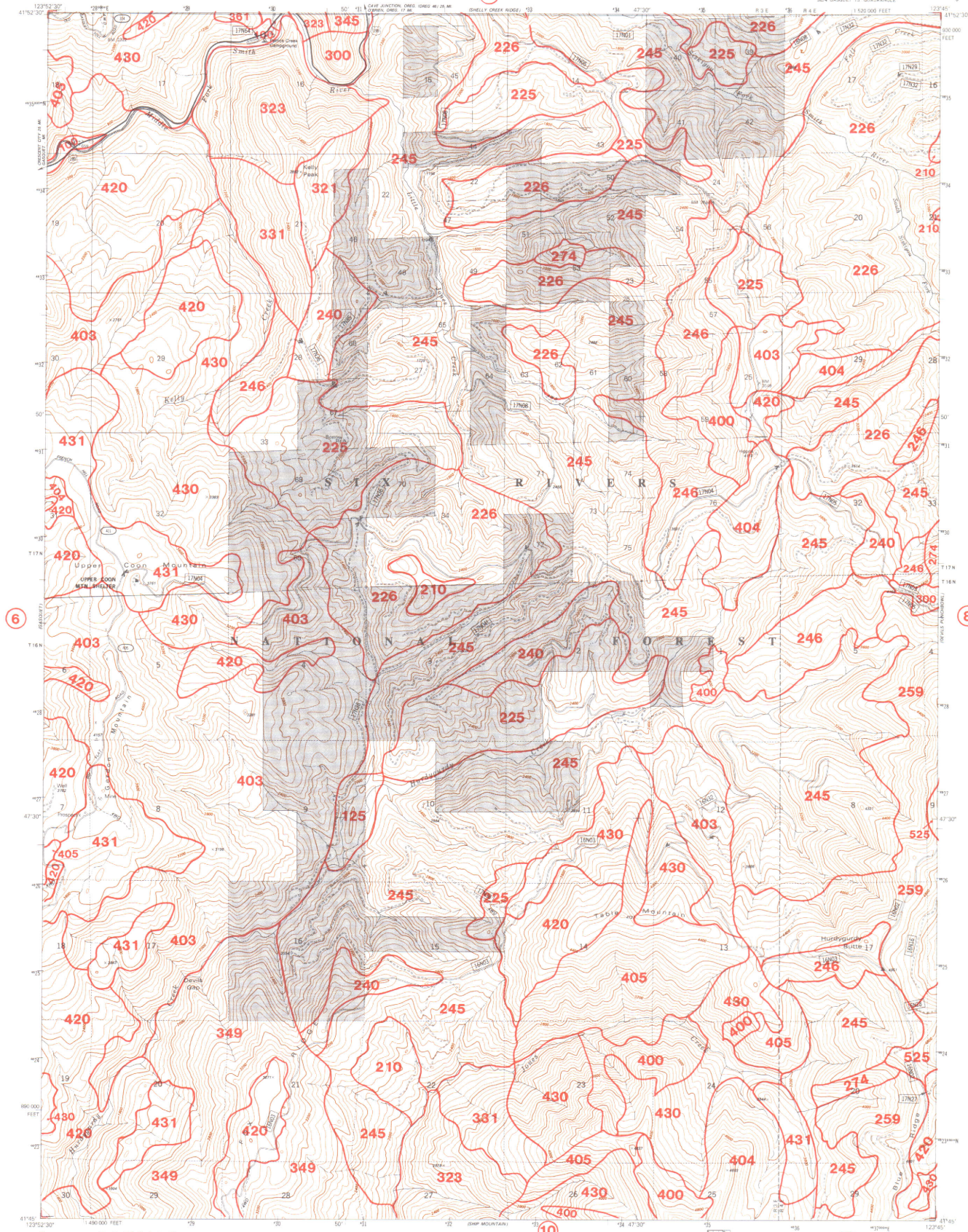
REVISED 1984

739-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

HURDYGURDY BUTTE QUADRANGLE
CALIFORNIA-DEL NORTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SEA GUSSET 10 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1975. Field checked 1977
Map edited 1982

Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
87 meters east as shown by dashed corner ticks.

Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



LEGEND

NATIONAL FOREST BOUNDARY
National Forest Boundary
Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

LEGEND

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Road, Location Approximate
Trail, Location Approximate

LEGEND

U.S. Highway
State Highway
County Road
Forest Road
Locked Gate

SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

HURDYGURDY BUTTE, CALIF.
SEA GUSSET 10 QUADRANGLE
N4145-W12345/7.5

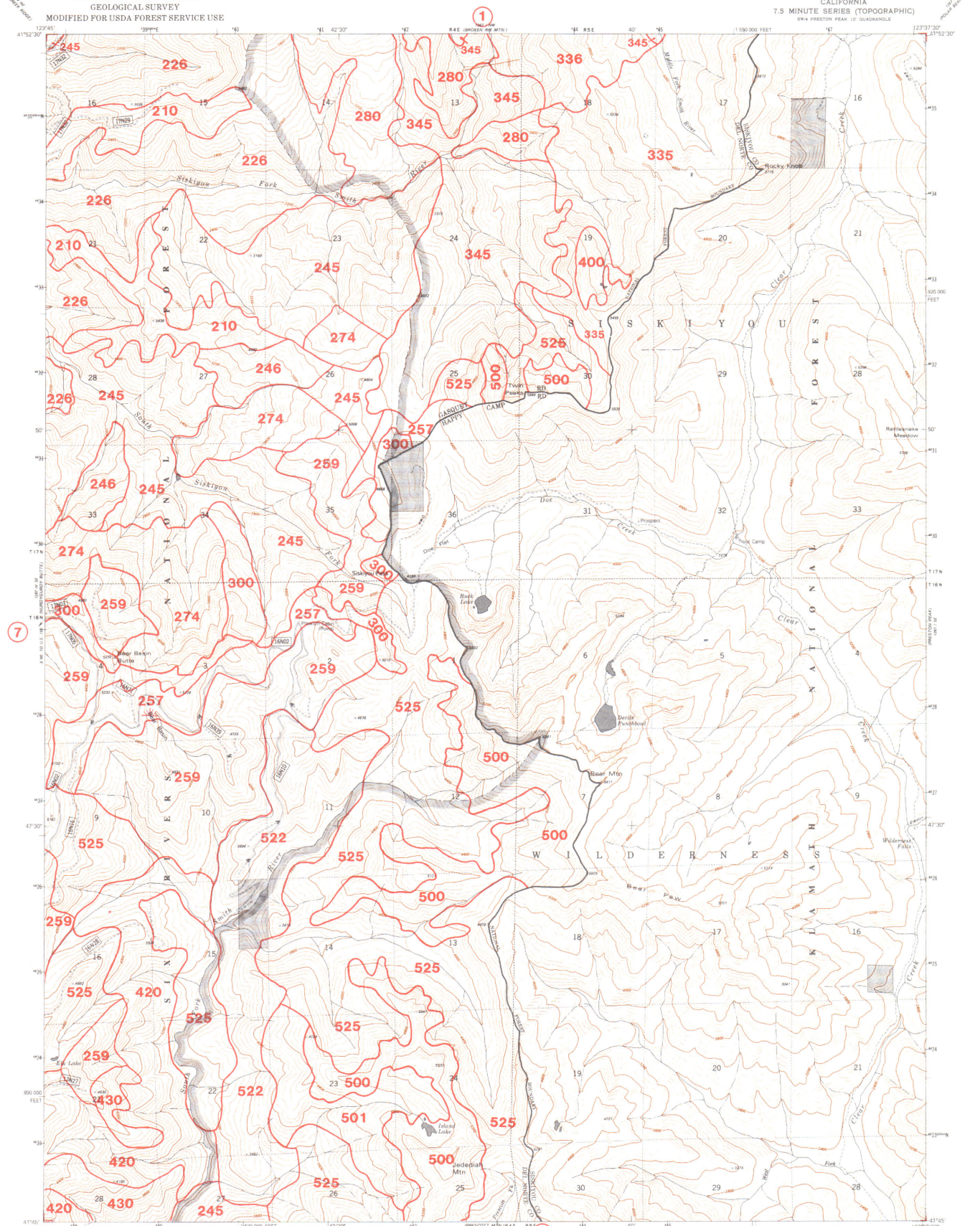
1982

REVISED 1984

739-4C

DEVILS PUNCHBOWL QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW14 PRESTON PEAK 15' QUADRANGLE

DEVILS PUNCHBOWL, CALIF.
SW 1/4 PRESTON PEAK 15 QUADRANGLE
N4145-W12337 5/7.5
1981
REVISED 1984
738-3C



Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1977. Map edited 1981.

Projection and 10,000-foot grid ticks. California coordinate system, zone 1 (Lambert conformal cone).
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
96 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service,
Geomatrix Systems Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Res.
Landnet revised according to additional Forest Service evidence



CONT
NATIONAL GE

— National Forest Boundary

Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable

— Surveyed, Location Approximate

Unsurveyed, Protraction

LEGEND

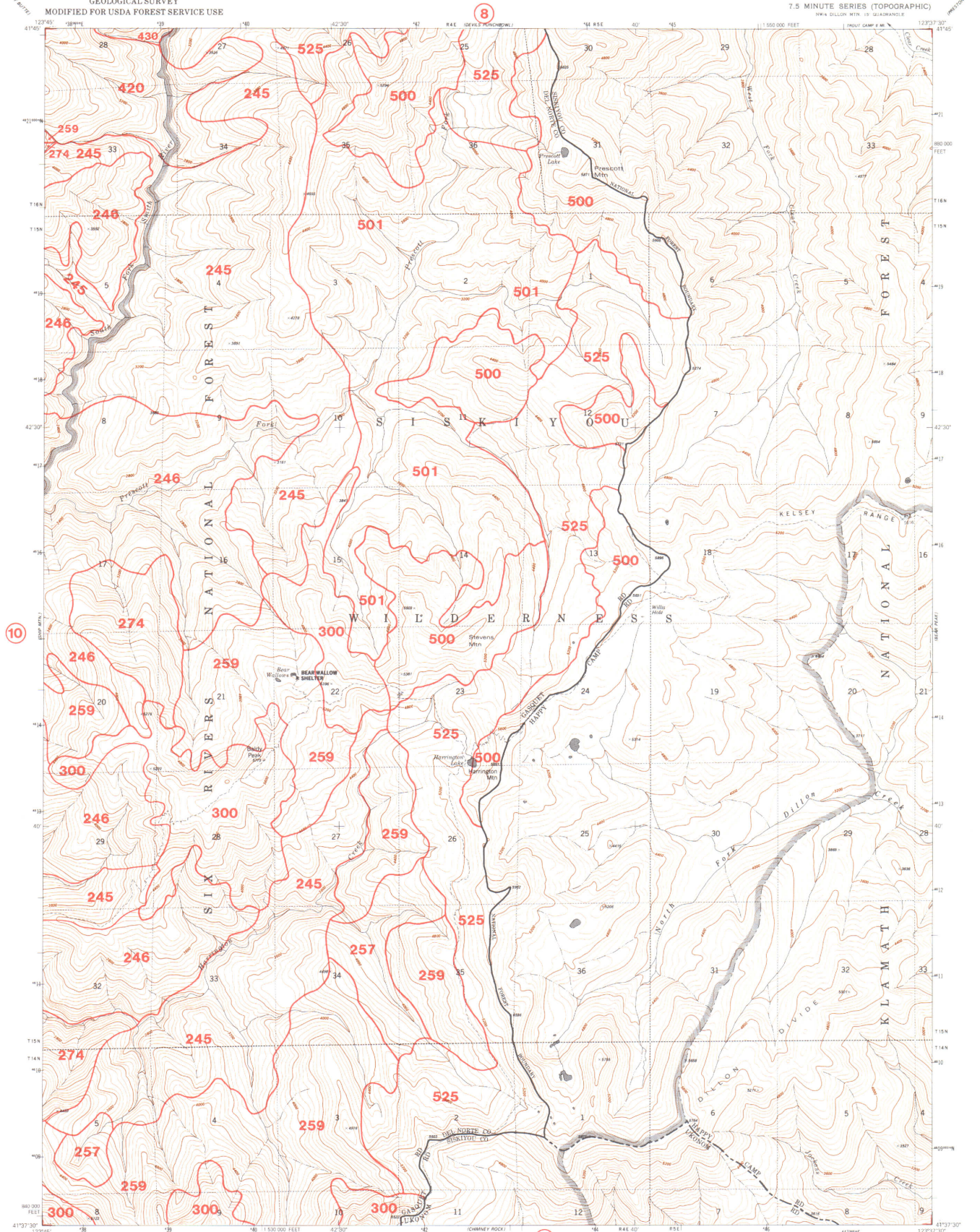
- Primary Highway
- Secondary Highway
- Improved Light Duty
- Unimproved Dirt
- Trail
- Road, Location Approximate
- Trail, Location Approximate



SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

PRESCOTT MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base map prepared by the U.S. Geological Survey

Control by USGS and NGS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1975. Field checked 1977

Map edited 1981

Projection and 10,000-foot grid ticks: California coordinate

system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid, zone 10

1927 North American Datum

To place on the predicted North American Datum 1983

move the projection lines 20 meters north and

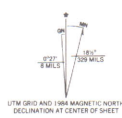
96 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service,

Geomatics Service Center, from 1982 aerial photography and

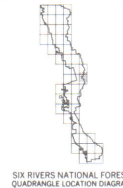
1984 correction guides furnished by the FS Pacific Southwest Region

Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1989

- LEGEND**
- National Forest Boundary
 - Alienated Land within the National Forest Boundary
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Protraction
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Trail
 - Locked Gate



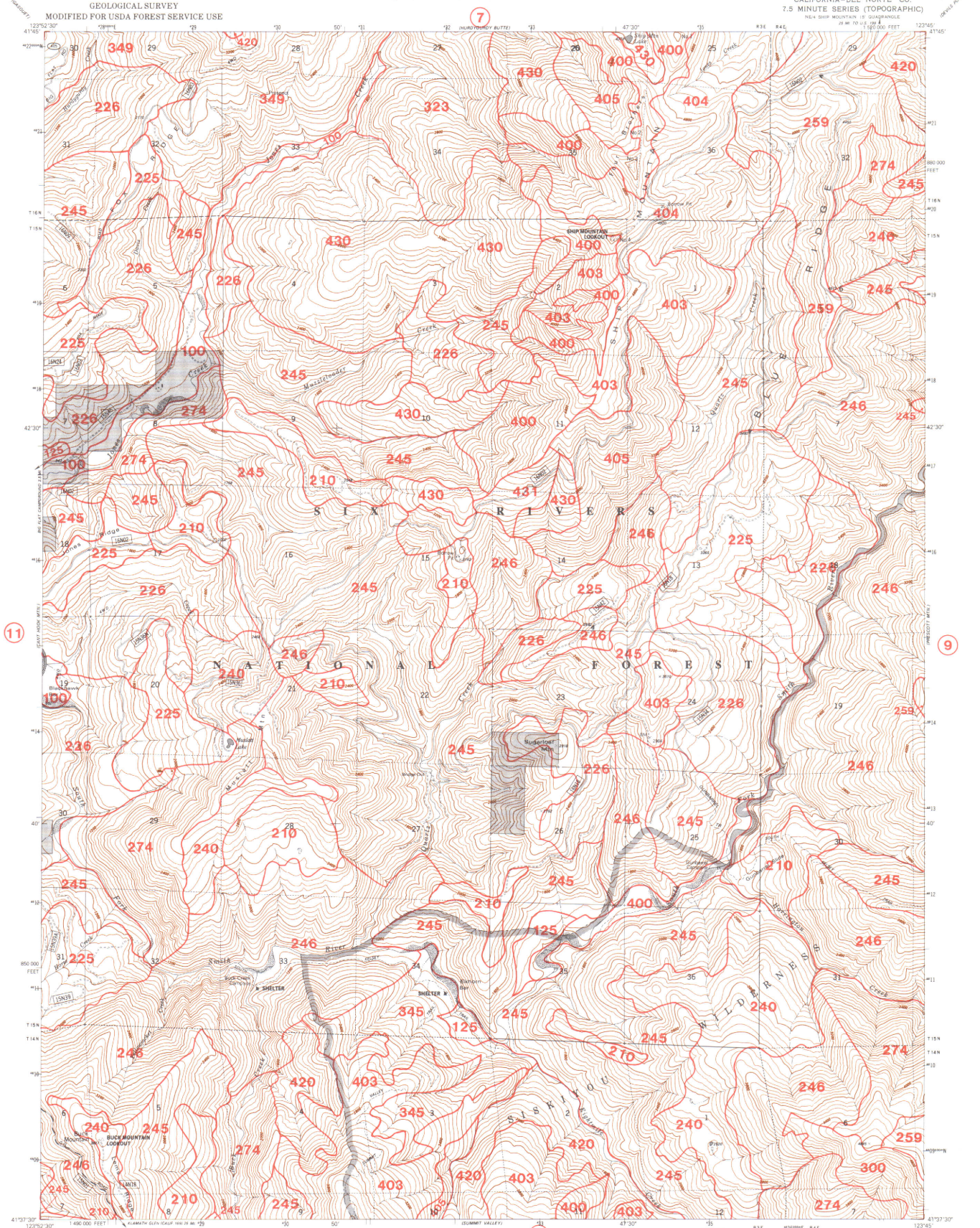
9

PRESCOTT MTN., CALIF.
NW 1/4 DILLON MTS. 15' QUADRANGLE
NAD 1983 - W12337 5/7.5

1981
REVISED 1984
721-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

SHIP MOUNTAIN QUADRANGLE
CALIFORNIA-DEL NORTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 SHIP MOUNTAIN IS QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1975-76. Fields checked 1977

Map edited 1982

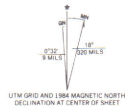
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
96 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service:
Geomorphologic Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region

Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND
National Forest Boundary
Alienated Land within the National Forest Boundary
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Road, Location Approximate
Trail, Location Approximate

U.S. Highway
State Highway
County Road
Forest Road
Forest Trail
Locked Gate



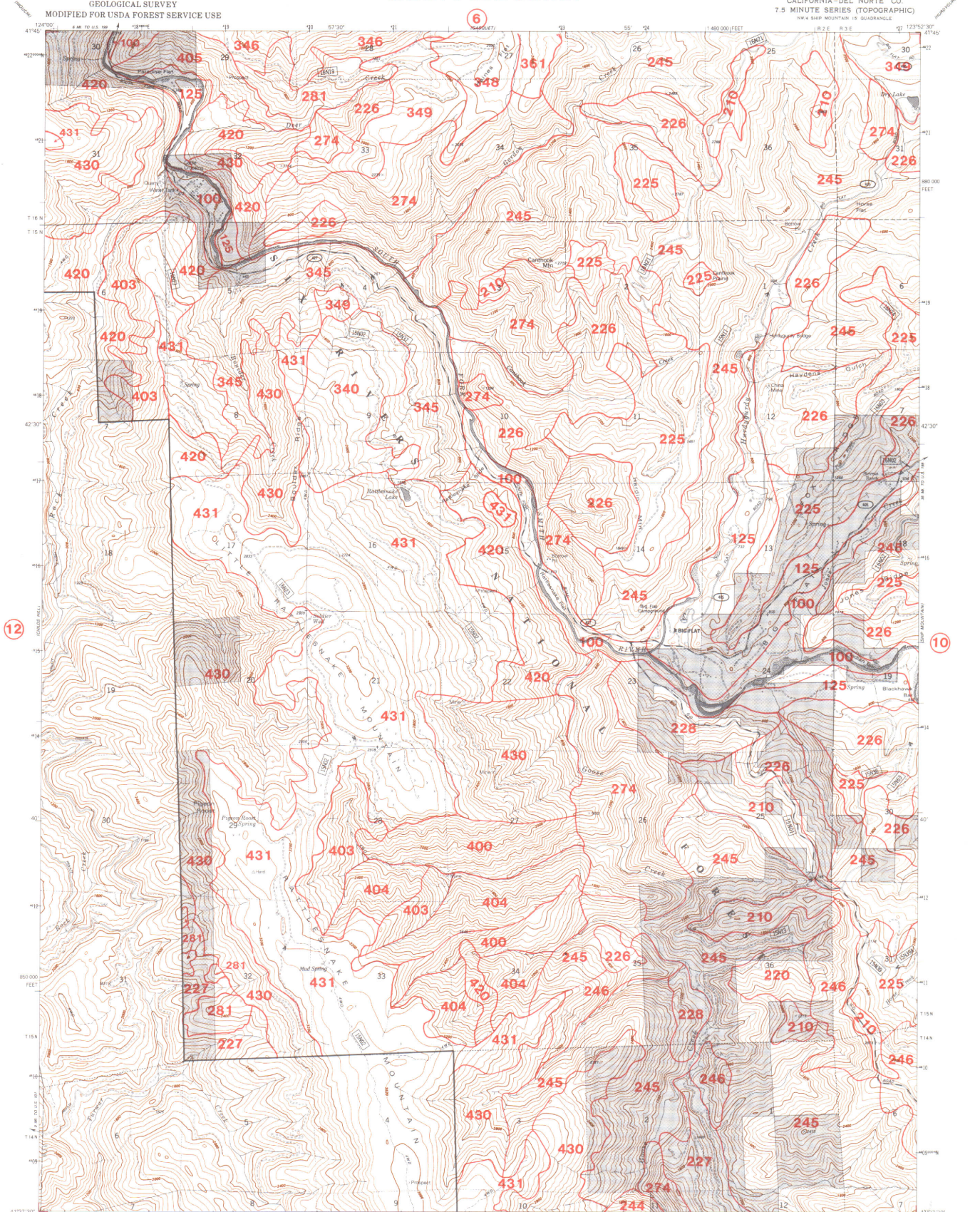
10

SHIP MOUNTAIN, CALIF.
NE 4 SHIP MOUNTAIN IS QUADRANGLE
N4137.5-W12345.7.5

1982
REVISED 1984
722-1C

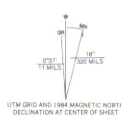
SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

CANT HOOK MTN. QUADRANGLE
CALIFORNIA-DEL NORTE CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW 1/4 SHIP MOUNTAIN 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Conform to USGS and NGS/NGA

Topography by photogrammetric methods from aerial
photographs taken 1975-76. Field checked 1977
Map edited 1982
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1987 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
87 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

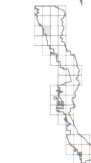
National Forest Boundary
Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Road, Location Approximate
Trail, Location Approximate

U.S. Highway
State Highway
County Road
Forest Road
Locked Gate



SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

11

CANT HOOK MTN. CALIF.
NW 1/4 SHIP MOUNTAIN 15 QUADRANGLE
N4137 S-W12352 5/7 S

1982
REVISED 1984
722-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

CHILDS HILL QUADRANGLE
CALIFORNIA—DEL NORTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NEW KLAMATH 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1964. Field checked 1965

Selected hydrographic data compiled from USGS surveys (1929)

This information is not intended for navigational purposes

Polyconic projection. 1927 North American datum

10,000-foot grid based on California coordinate system, zone 1

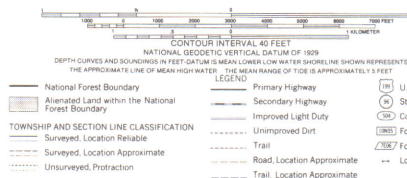
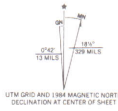
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue

Map photorevised 1975

No major culture or drainage changes observed

Modification to USGS base map by the USDA Forest Service, Geomorphology Section, from 1962 aerial photography and 1984 correction guides furnished by the FS Pacific Southwest Region

Landnet revised according to additional Forest Service evidence



SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

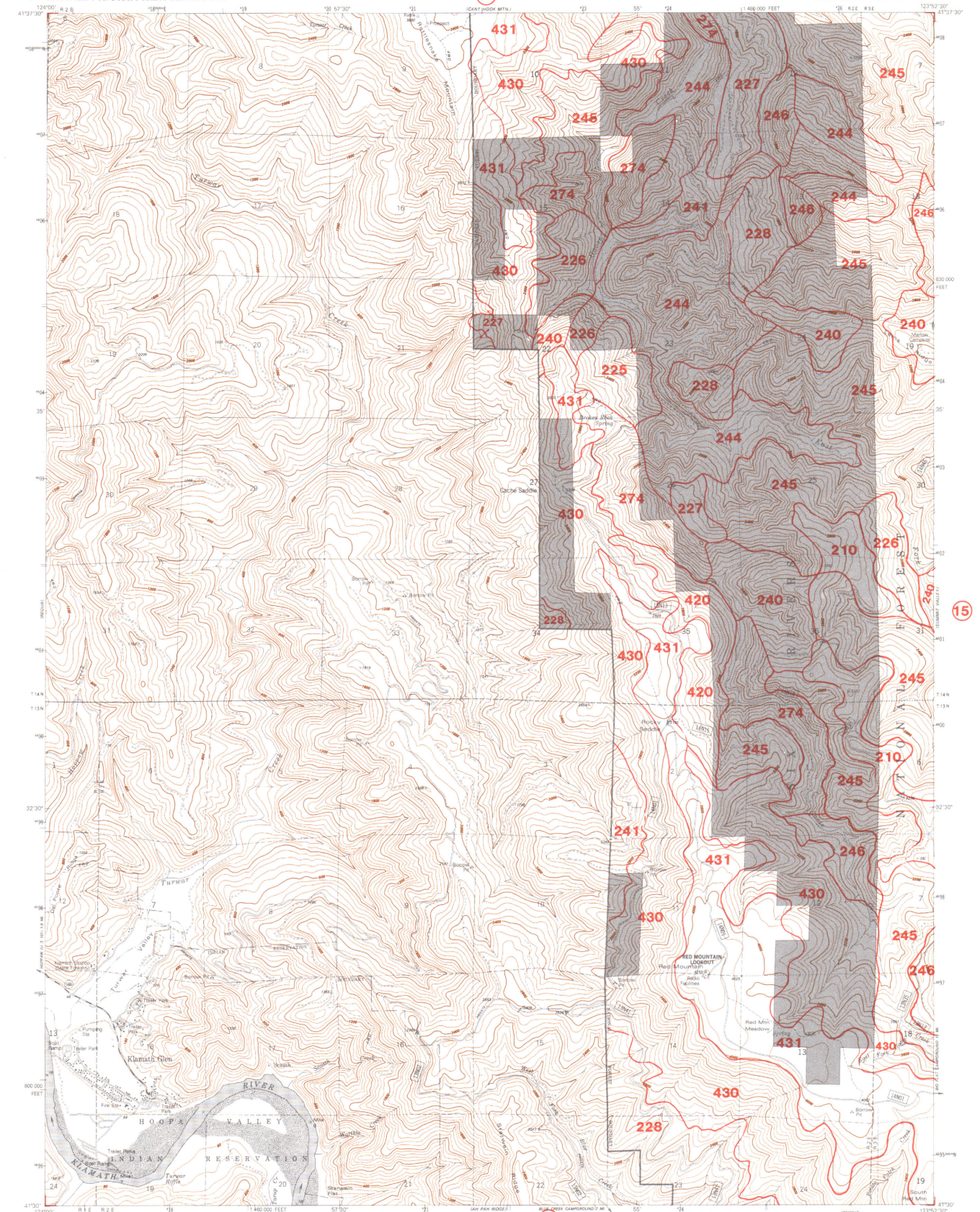
12

CHILDS HILL, CALIF.
NEW KLAMATH 15 QUADRANGLE
N4137 S—W12400/7.5

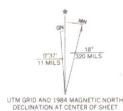
1966
REVISED 1984
723-1C

KLAMATH GLEN QUADRANGLE
CALIFORNIA-DEL NORTE CO
7.5 MINUTE SERIES (TOPOGRAPHIC)

11



Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1975-76. Field checked 1977
map updated 1982
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
87 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geomatrix Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Lantern revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

— National Forest Boundary
— Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable
- - - Surveyed, Location Approximate
- - - Unsurveyed, Protraction

— Primary Highway
— Secondary Highway
— Improved Light Duty
- - - Unimproved Dirt
- - - Trail
- - - Road, Location Approximate
- - - Trail, Location Approximate



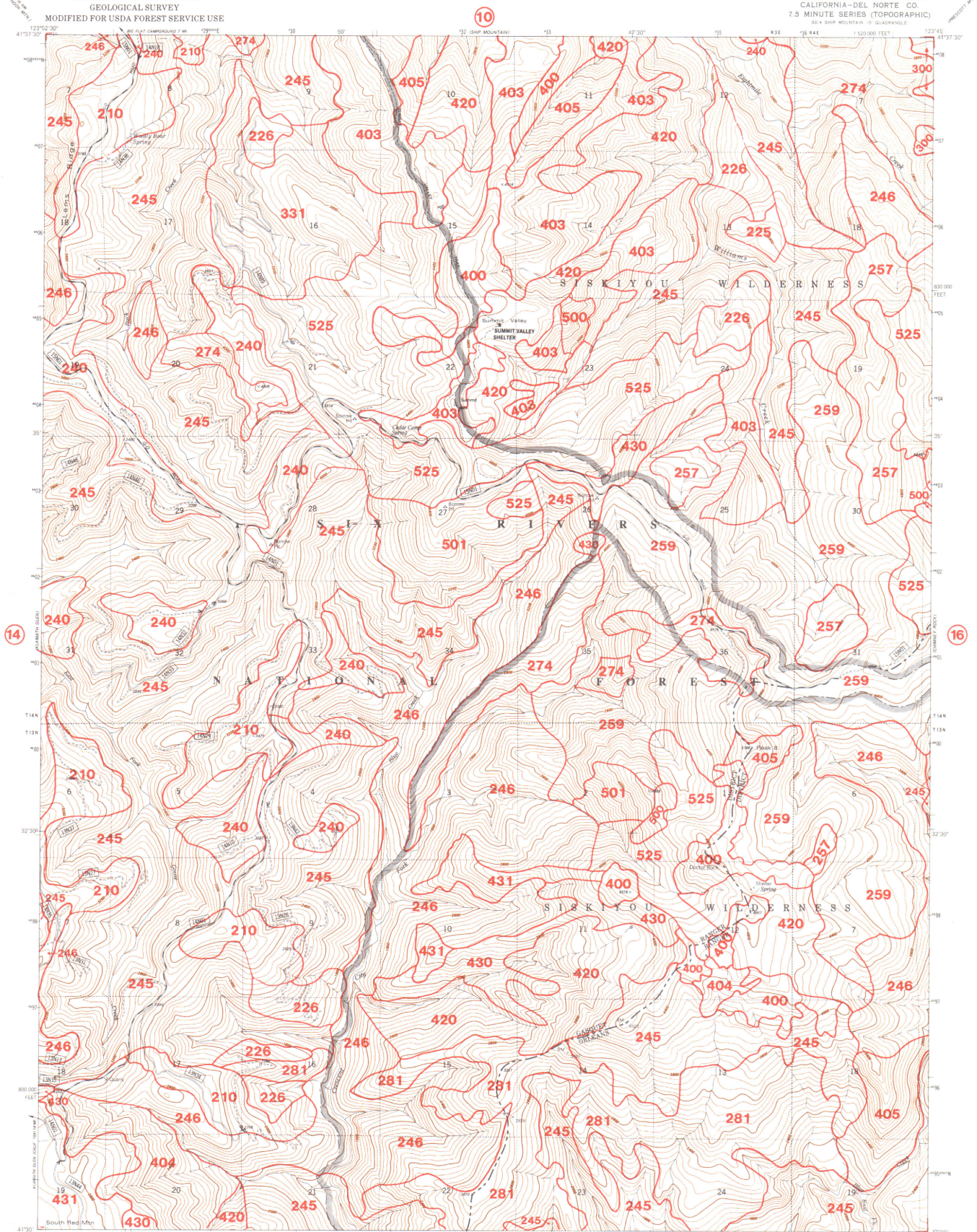
14

KLAMATH GLEN, CALIF.
SW/4 SHIP MOUNTAIN 13' GUADRANGLE
N4130-W12352 5/7 5
1982
REVISED 1984
722-3C

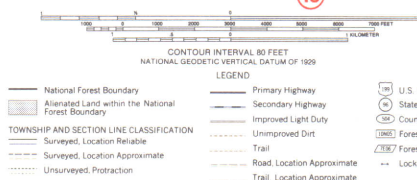
SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

SUMMIT VALLEY QUADRANGLE
CALIFORNIA-DEL NORTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



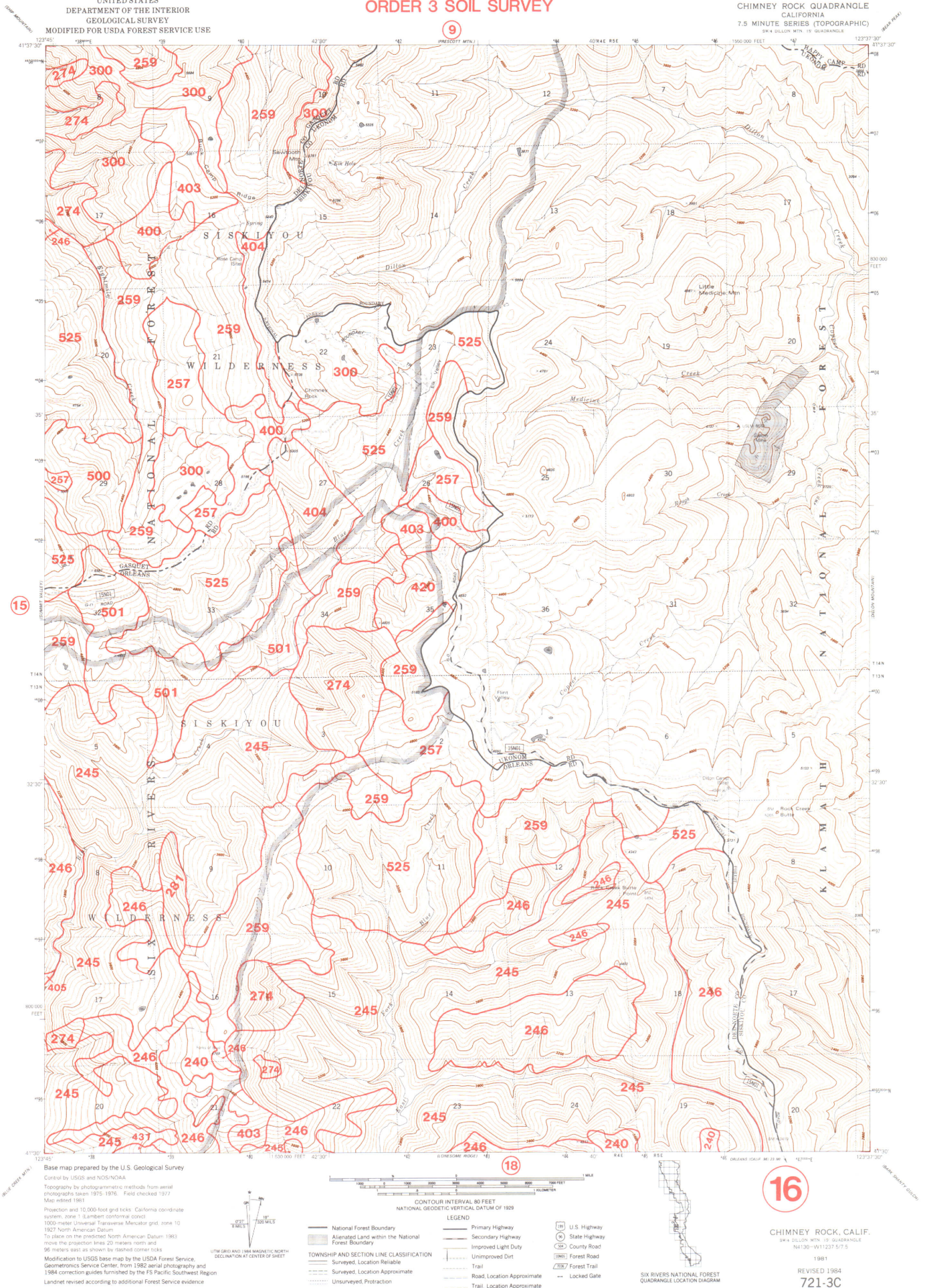
Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1975-76. Field checked 1977
Map edited 1981
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
98 meters west as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



15
SUMMIT VALLEY, CALIF.
SEA SHIP MOUNTAIN 15 QUADRANGLE
NAD 1983 - W1234567.5
1981
REVISED 1984
722-4C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

CHIMNEY ROCK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 4 DILLON MTS. 19 QUADRANGLE



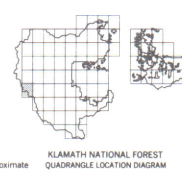
SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
Modification to USGS base map by the Geomatics Service
Center from 1982 aerial photography and 1983 correction
grids furnished by the Pacific Southwest Region



- | | |
|--|-------------------------------|
| TOWNSHIP AND SECTION LINE CLASSIFICATION | LEGEND |
| — National Forest Boundary | — Primary Highway |
| — Alienated Land within the National Forest Boundary | — Secondary Highway |
| — Surveyed Location Reliable | — Improved Light Duty |
| — Surveyed Location Approximate | — Unimproved Dirt |
| — Unsurveyed Protraction | — Trail |
| | — Locked Gate |
| | — Road, Location Approximate |
| | — Trail, Location Approximate |



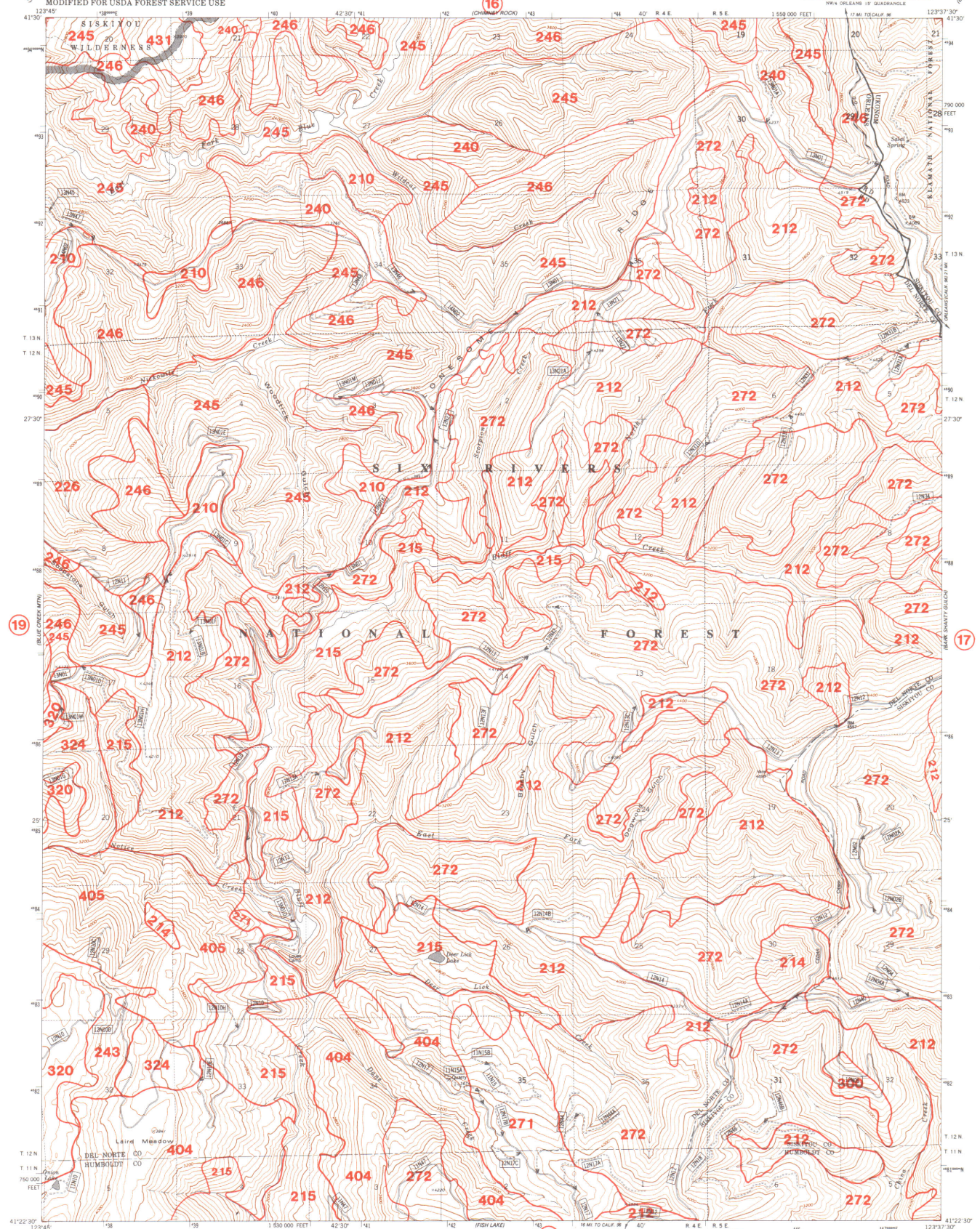
17

BARK SHANTY GULCH, CALIF.
NEW ORLEANS 1° QUADRANGLE
N4122.5-W12330.7.5

1983
DMA 1208 I NS-SERIES V895
704-1C

LONESOME RIDGE QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



18

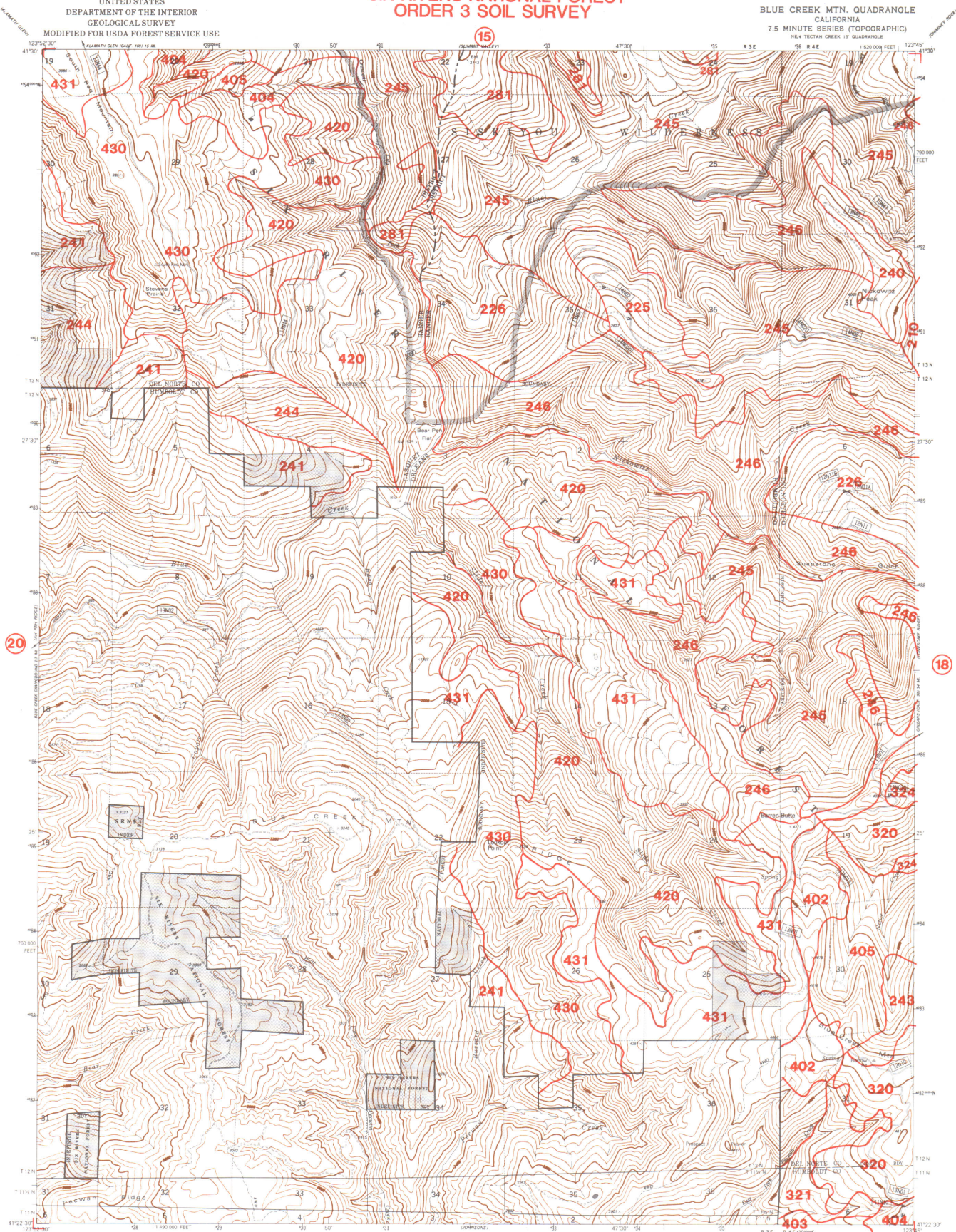
LONESOME RIDGE, CALIF.
NW/4 ORLEANS 15' QUADRANGLE
N4122 S—W12337 S/7 S

1974
REVISED 1984
704-2C

1974
REVISED 1984
704-2C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

BLUE CREEK MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NEAR TECTON CREEK 10' QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NGS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1975-76. Field checked 1977

Map edited 1982

Projection and 10,000-foot grid ticks: California coordinate

system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid, zone 10

1927 North American Datum

To place on the predicted North American Datum 1983

move the projection lines 20 meters north and

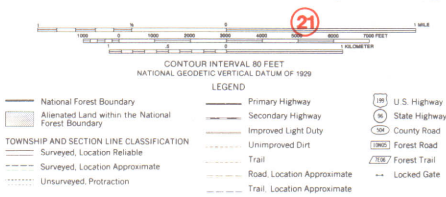
96 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service,

Geomorphics Service Center, from 1982 aerial photography and

1984 correction guides furnished by the FS Pacific Southwest Region

Landnet revised according to additional Forest Service evidence



19

BLUE CREEK MTN., CALIF.

NEAR TECTON CREEK 10' QUADRANGLE

NAD83 S-W-1234567

1982

REVISED 1984

705-1C

AH PAH RIDGE QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

[illegible]

Trail, Location Approximate

SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

REVISED 1984

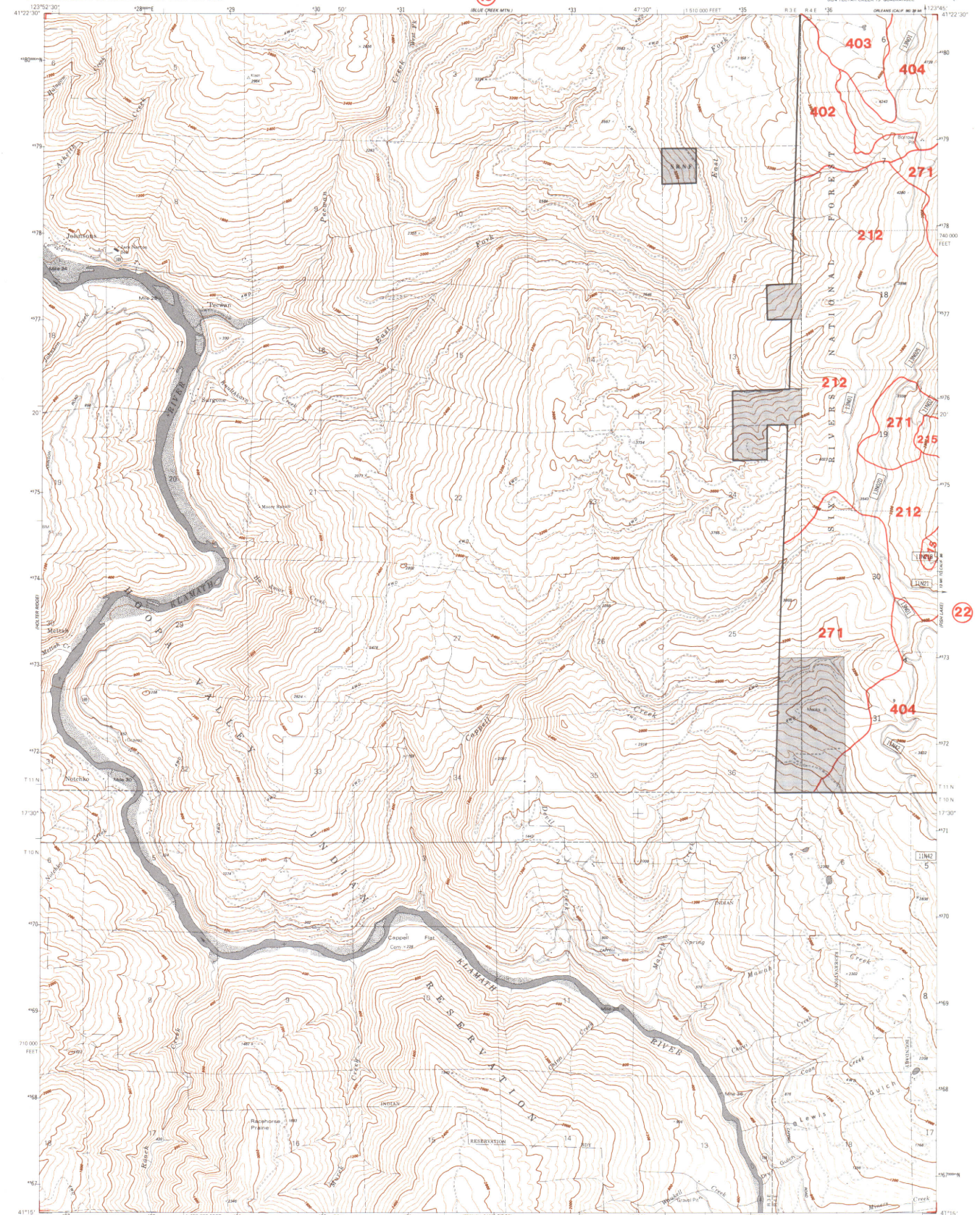
705-2C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

JOHNSONS QUADRANGLE
CALIFORNIA—HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SEA TECTAH CREEK 15 QUADRANGLE

19



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1977

Map edited 1982

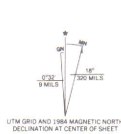
Projection and 10,000-foot grid ticks: California coordinate system, zone 11 (ambiant conformal conic)

1000-meter Universal Transverse Mercator grid, zone 10 1927 North American Datum

To place on the predicted North American Datum 1983 move the projection lines 20 meters north and 96 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service, Geomatics Service Center, from 1982 aerial photography and 1984 correction guides furnished by the FS Pacific Southwest Region

Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

— National Forest Boundary
— Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable
- - - Surveyed, Location Approximate
- - - Unsurveyed, Protraction

— Primary Highway
— Secondary Highway
— Improved Light Duty
— Unimproved Dirt
— Trail
— Road, Location Approximate
— Trail, Location Approximate

— U.S. Highway
— State Highway
— County Road
— Forest Road
— Forest Trail
— Locked Gate



21

JOHNSONS, CALIF.
SEA TECTAH CREEK 15 QUADRANGLE
N4115-W12345/7.5

1982
REVISED 1984
705-4C

FISH LAKE QUADRANGLE
CALIFORNIA—HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

This is a detailed topographic map of the Six Rivers National Forest area. The map features brown contour lines indicating elevation, with major contours labeled every 100 feet (e.g., 1000, 1100, 1200). Red lines and numbers highlight specific elevation points and peaks, with values such as 212, 272, 327, 402, and 404. The map includes labels for various geographical features, including Onion Mountain, Baldy Mountain, and several creeks like Birch Creek and Cold Spring. The text 'SIX RIVERS NATIONAL FOREST' is prominently displayed across the center. A grid system is overlaid on the map, with coordinates marked along the edges (e.g., 42°30' N, 123°30' W). The map also shows a network of roads and trails, some labeled with numbers like 100, 101, 102, etc. The overall terrain appears rugged with significant elevation changes.

LEGEND

- Primary Highway
- Secondary Highway
- Improved Light Duty
- Unimproved Dirt
- Trail
- Road, Location Approximate
- Trail, Location Approximate

-  U.S. Highway
-  State Highway
-  County Road
-  Forest Road
-  Forest Trail
-  Locked Gate

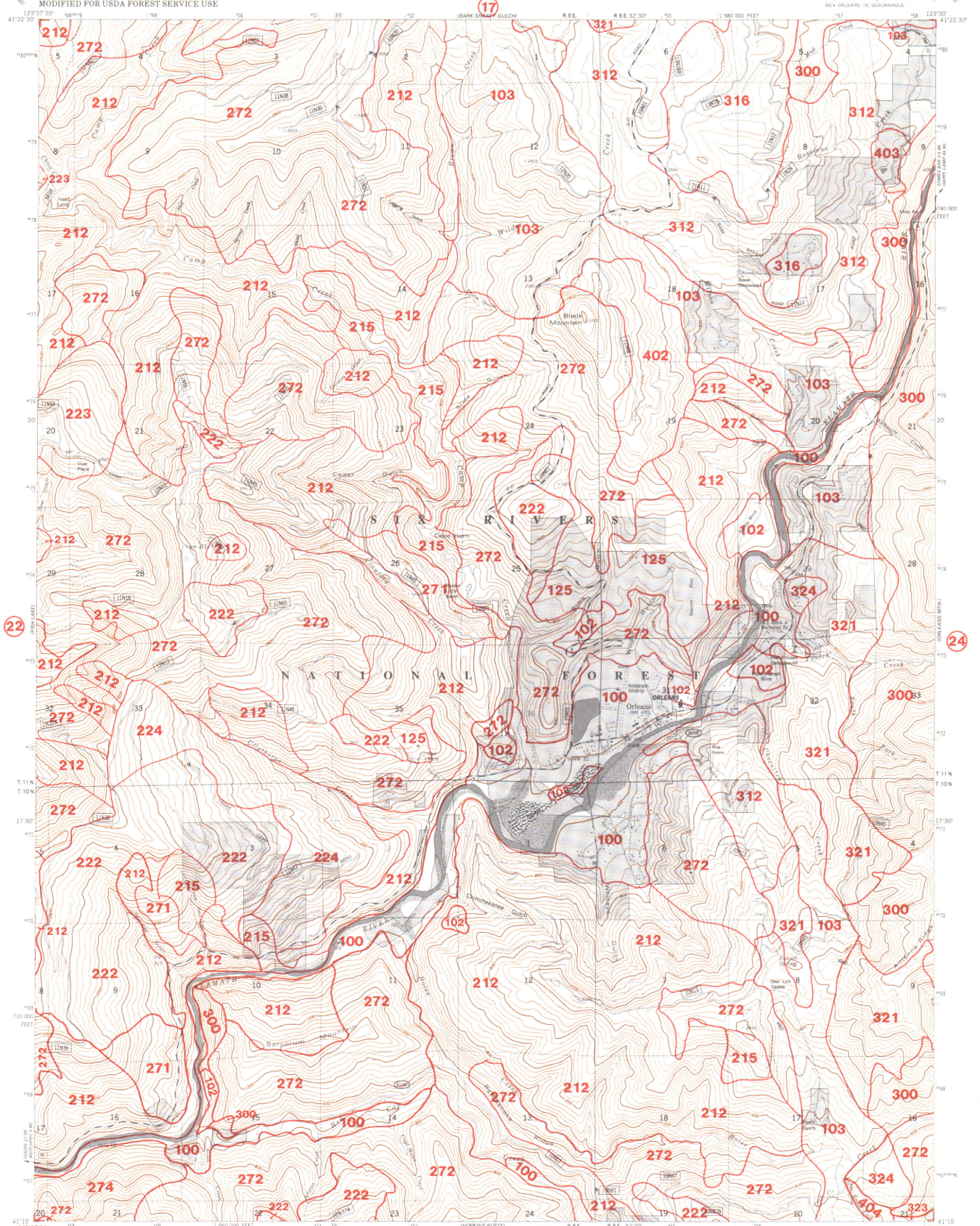
SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

FISH LAKE, CALIF.
SW/4 ORLEANS 15' QUADRANGLE
N4115-W12337.5/7.5
1974
REVISED 1984
704-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

ORLEANS QUADRANGLE
CALIFORNIA—HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
864 ORLEANS 15 QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974. Map edited 1978
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomorphics Service Center, from 1962 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

National Forest Boundary
Alienated Land within the National Forest Boundary
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Road, Location Approximate
Trail, Location Approximate

U.S. Highway
State Highway
County Road
Forest Road
Forest Trail
Locked Gate



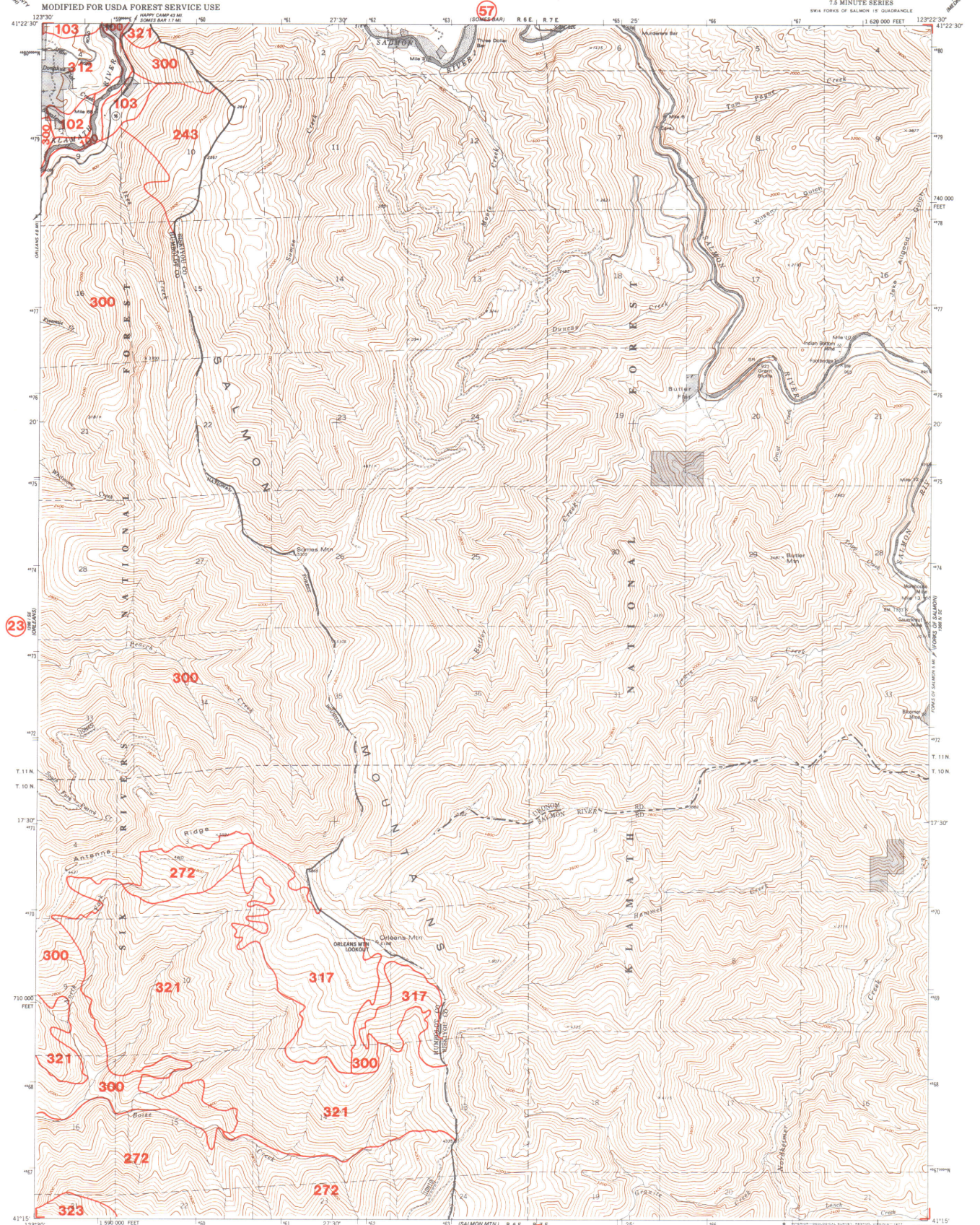
ORLEANS, CALIF.
864 ORLEANS 15 QUADRANGLE
N4115-W12307.5

1978
REVISED 1984
704-4C

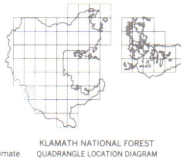
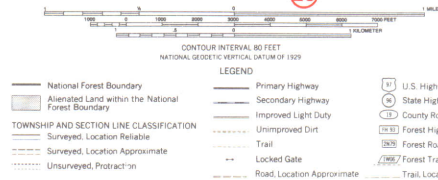
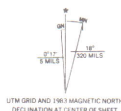
SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

ORLEANS MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Projection and 10,000 foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10 1967 North American Datum
Modification to USGS base map by the Geomatics Service
Center from 1982 aerial photography and 1983 correction
guides furnished by the Pacific Southwest Region

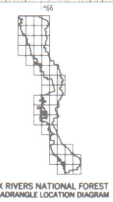
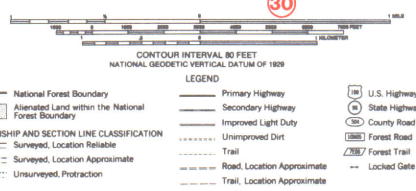
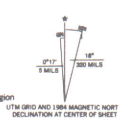


24
ORLEANS MTN., CALIF.
SIX RIVERS OF SALMON R. QUADRANGLE
N4115-W12322 5/7.5
1983
DMA 1366 IV SW-SERIES 5985
703-3C

SALMON MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

This topographic map depicts the Trinity Alps Wilderness area, characterized by the Salmon River and the Trinity National Forest. The map features a grid system with coordinates ranging from 123°30' to 123°22'30" longitude and 41°15' to 41°07'30" latitude. Elevation is indicated by contour lines and numerical markers, with peaks reaching up to 5520 feet. Key geographical features include the Salmon River, Trinity National Forest, and the Trinity Alps Wilderness. The map also shows various trails, including the Salmon River Trail and the Trinity Alps Trail, and several peaks, such as Indian Rock, Prospect, and Mullen's Cape. The map is oriented with North at the top, and the grid lines are labeled with their respective coordinates.

Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1974. Map edited 1978
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter vertical interval. North arrow. Grid ticks,
zone 10, shown in blue. 1972 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomatrix Systems Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



25

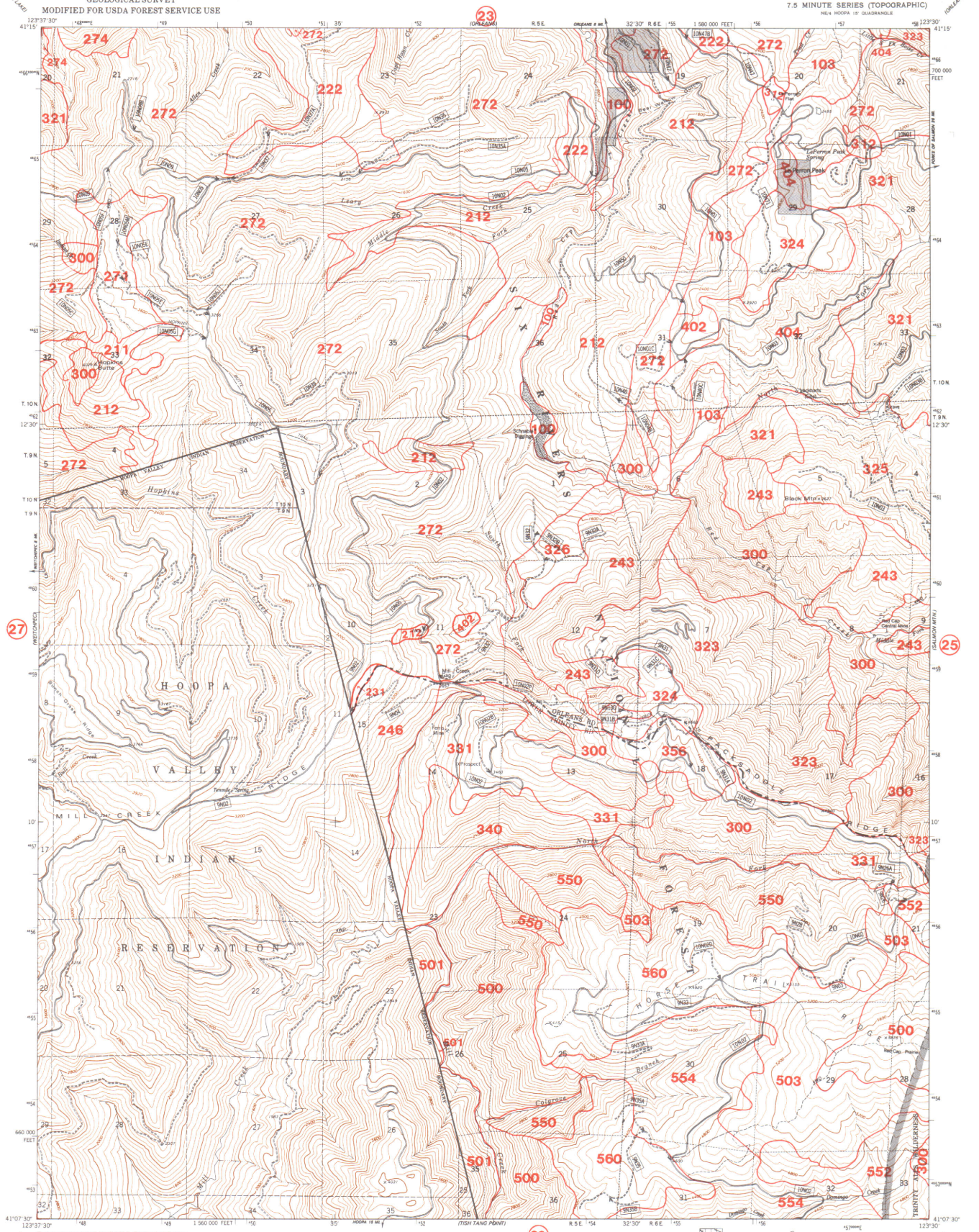
SALMON MTN., CALIF.
NW/4 SALMON MTN. 15' QUADRANGLE
N4107.5—W12322.5/7.5

1978

REVISED 1984

686-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972 and 1973. Field checked 1974.
Map edited 1979
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomorphics Service Center, from 1982 aerial photography
and 1984 correction guides furnished by the FS Pacific
Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 100-METER NORTH
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

TOWNSHIP AND SECTION LINE CLASSIFICATION

- National Forest Boundary
- Alienated Land within the National Forest Boundary
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Unserved, Location Approximate
- Unserved, Location Approximate

LEGEND

- Primary Highway
- Secondary Highway
- Improved Light Duty
- Unimproved Dirt
- Trail
- Road, Location Approximate
- Trail, Location Approximate

LEGEND

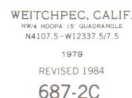
- U.S. Highway
- State Highway
- County Road
- Forest Road
- Forest Trail
- Locked Gate

SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

26

HOPKINS BUTTE, CALIF.
NEA HOOPA 19 QUADRANGLE
NAD1975-W123307.5
1979
REVISED 1984
687-1C

WEITCHPEC QUADRANGLE
CALIFORNIA-HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1989

LEGEND

OPTIONAL FOREST BOUNDARY
 Annotated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION
 Surveyed, Location Reliable
 Surveyed, Location Approximate
 Unsurveyed, Protraction

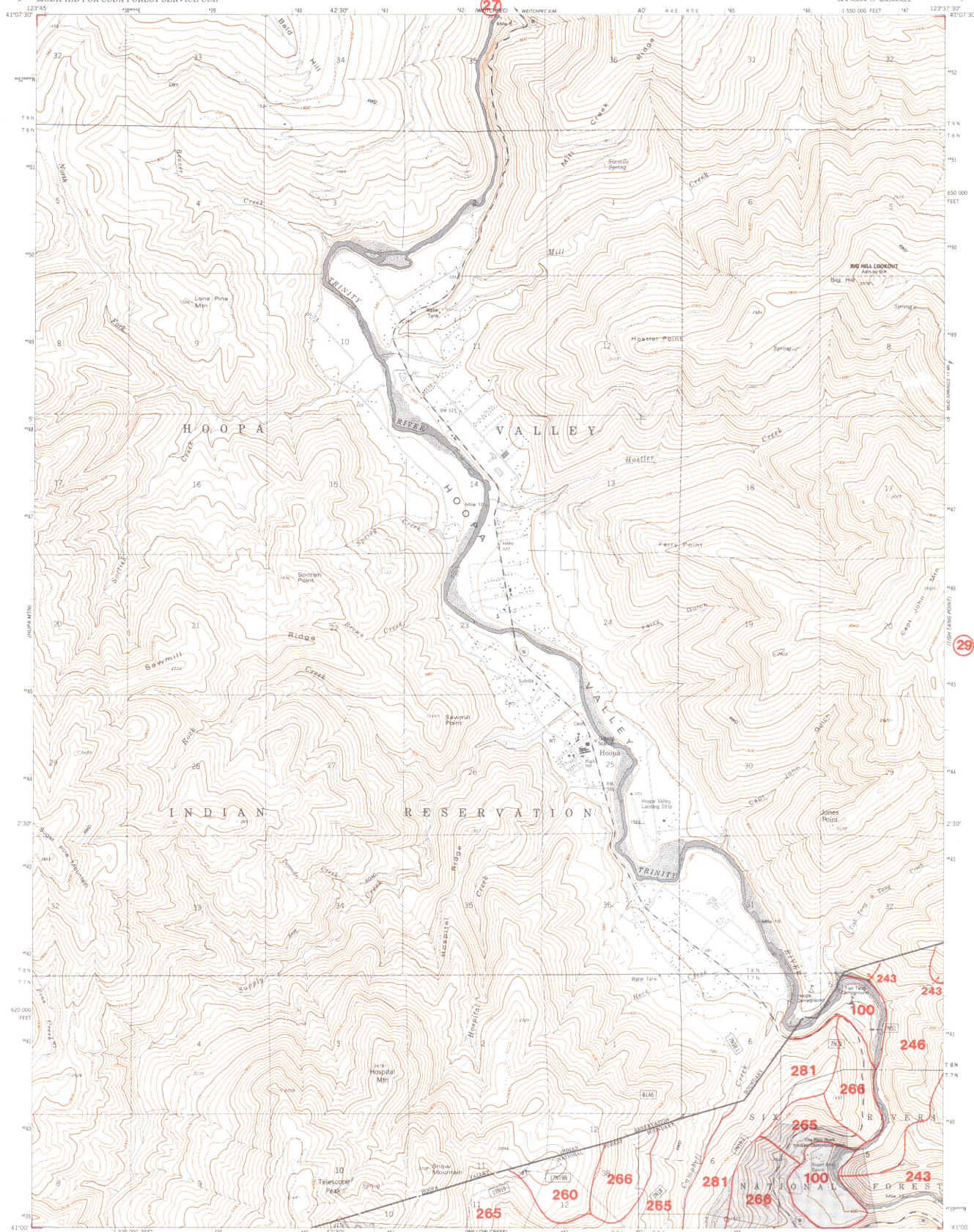
ROADS
 Primary Highway
 Secondary Highway
 Improved Light Duty
 Unimproved Dirt
 Trail
 Road Location Approximate
 Trail Location Approximate
 Locked Gate

U.S. HIGHWAY
STATE HIGHWAY
COUNTY ROAD
FOREST ROAD
FOREST TRAIL

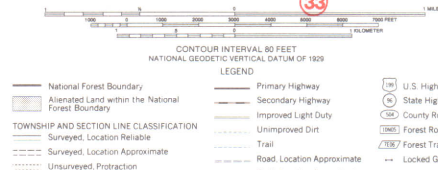
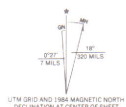
SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

HOOPA QUADRANGLE
CALIFORNIA-HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
1:50,000 SCALE
1:500,000 FEET



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1968 and 1972-73. Field checked 1974.
Map edited 1979.
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American Datum.
To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
56 meters east as shown by dashed corner ticks.
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence.

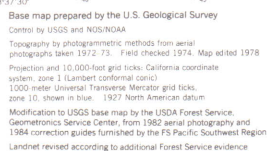


28

HOOPA, CALIF.
1984 HOOPA 10 QUADRANGLE
N4100-W12337 5/7.5
1979
REVISED 1984
687-3C

TISH TANG POINT QUADRANGLE
CALIFORNIA—HUMBOLT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE ¼ HOOPA 15' QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



1000 500 0 500 1000 FEET
 1 0.5 0 0.5 1 KILOMETER

CONTOUR INTERVAL 80 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

— National Forest Boundary	— Primary Highway	(18) U.S. Highway
- - - Alienated Land within the National Forest Boundary	— Secondary Highway	(16) State Highway
	- - - Improved Light Duty	(32) County Road
TOWNSHIP AND SECTION LINE CLASSIFICATION	- - - Unimproved Dirt	(385) Forest Road
- - - Surveyed, Location Reliable	- - - Trail	(185) Forest Trail
- - - Surveyed, Location Approximate	- - - Road, Location Approximate	- - - Locked Gate
- - - Unsurveyed, Protraction	- - - Trail, Location Approximate	



29

TISH TANG POINT, CALIF.
SEA HOOPA 15' QUADRANGLE
N4100—W12330/7.5

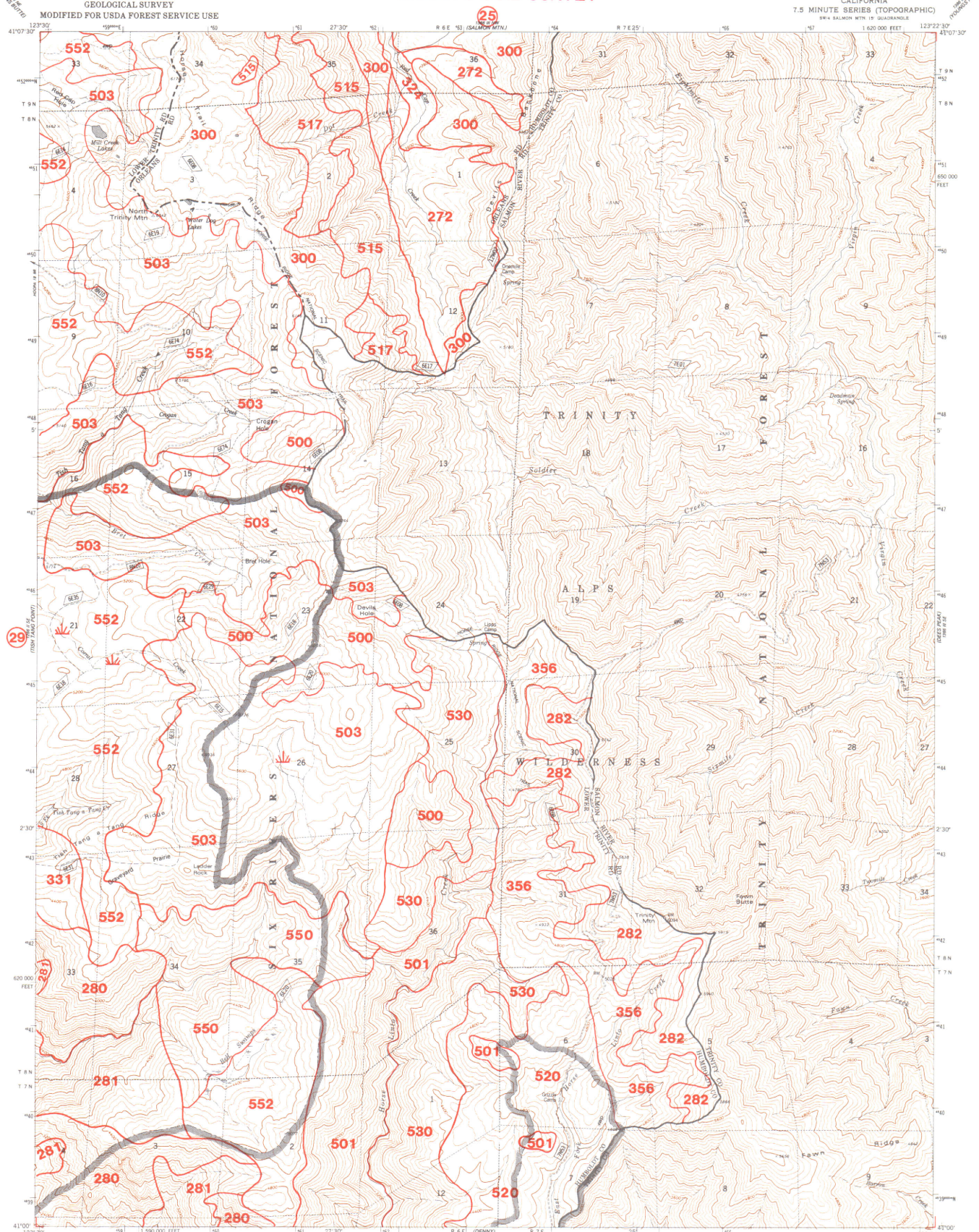
1978

REVISED 1984

687-4C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

TRINITY MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 4 SALMON MTH 19 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1972-73. Field checked 1974. Map edited 1979

Projection and 10,000-foot grid ticks: California coordinate

system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid ticks,

zone 10, shown in blue. 1927 North American Datum

To place on the predicted North American Datum 1983

move the projection lines 20 meters north and

98 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service,

Geomatics Service Center, from 1982 aerial photography and

1984 correction guides furnished by the 73 Pacific Southwest Region

Landnet revised according to additional Forest Service evidence

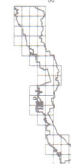


UTM GRID AND 1984 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

TOWNSHIP AND SECTION LINE CLASSIFICATION	
—	Surveyed, Location Reliable
- - -	Surveyed, Location Approximate
...	Unsurveyed, Reversion
LEGEND	
—	Primary Highway
- - -	Secondary Highway
- · - · -	Improved Light Duty
- · - · -	Unimproved Dirt
- · - · -	Trail
- · - · -	Road, Location Approximate
- · - · -	Trail, Location Approximate
—	U.S. Highway
—	State Highway
—	County Road
—	Forest Road
—	Forest Trail
—	Locked Gate



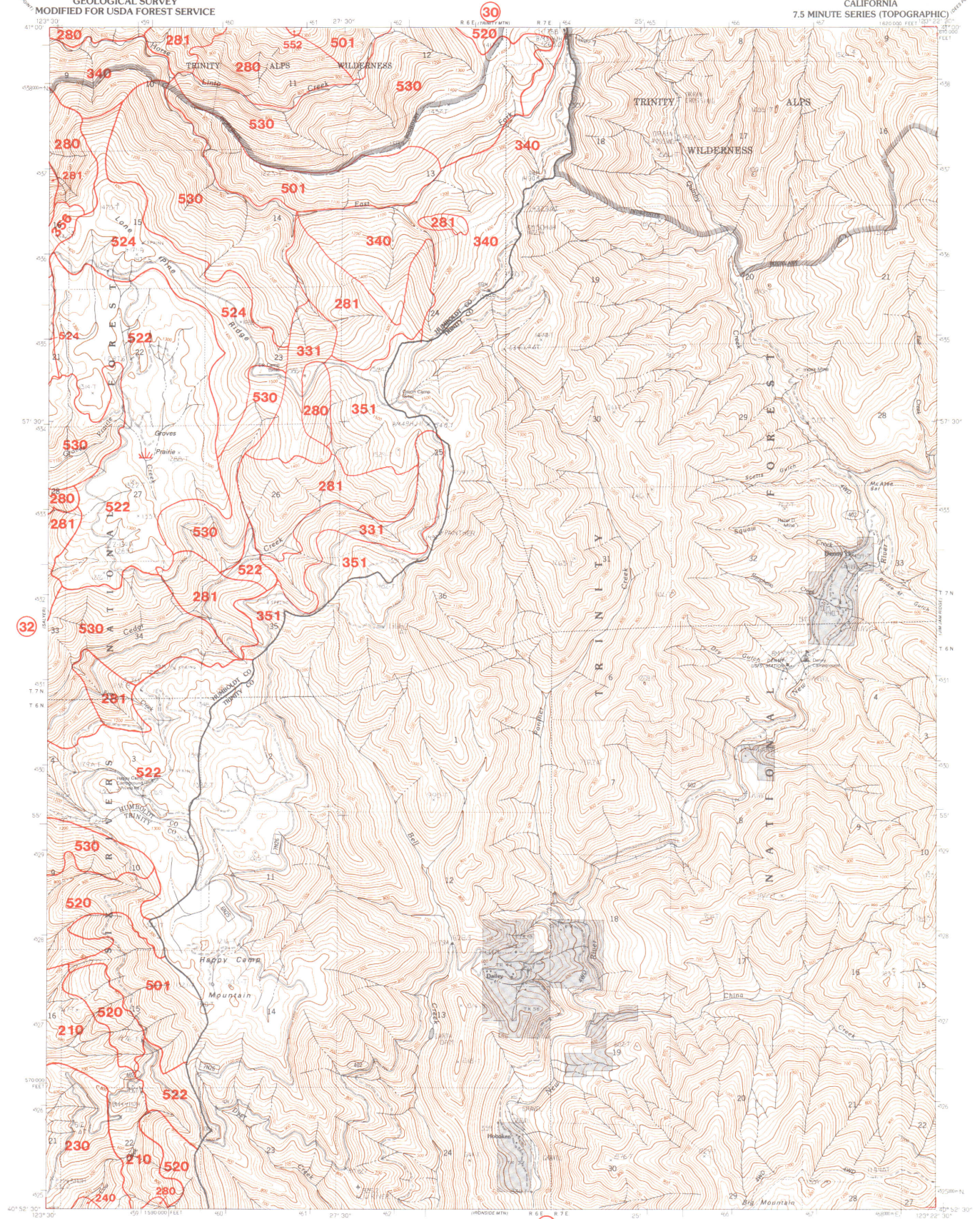
SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

30

TRINITY MTN. CALIF.
SW 4 SALMON MTH 19 QUADRANGLE
N4100-W12322 5/7.5

1979
REVISED 1984
686-3C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY



PROVISIONAL BASE MAP PREPARED BY U.S. GEOLOGICAL SURVEY
CONTRIBUTED BY: U.S. GEOLOGICAL SURVEY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN: 1962
FIELD CHECKED: 1962
PROJECTION: UTM
GRID: 1000 METER UNIVERSAL TRANSVERSE MERCATOR
VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983
move the projection line as shown by dashed corner ticks
120 meters north (5 meters east)
Modification to USGS provisional base map by the U.S.
Forest Service, Geomorphics Service Center from 1982 aerial
photography and 1983 correction guides furnished by the
USFS Pacific Southwest Region

CONTOUR INTERVAL 20 METERS
ELEVATIONS SHOWN TO THE NEAREST METER
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by 0.3048

LEGEND

— National Forest Boundary	— Primary Highway	— US Highway
— Non-Forest Service Land within Provisional Boundary as of 1983	— Secondary Highway	— State Highway
— Township and Section Line Classification	— Improved Light Duty	— County Road
— Surveyed Location Reliable	— Unimproved Dirt	— Forest Highway
— Surveyed Location Approximate	— Trail	— Forest Road
— Unsurveyed Protection	— Approximate Road	— Forest Trail
	— Approximate Trail	

31

DENNY, CALIF.
PROVISIONAL EDITION 1982

NAD83 5 W 12322 5 7 5
REVISED 1984

669-2C

SHASTA - TRINITY
NATIONAL FOREST

SALYER QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

7.5 MINUTE SERIES (TOPOGRAPHIC)



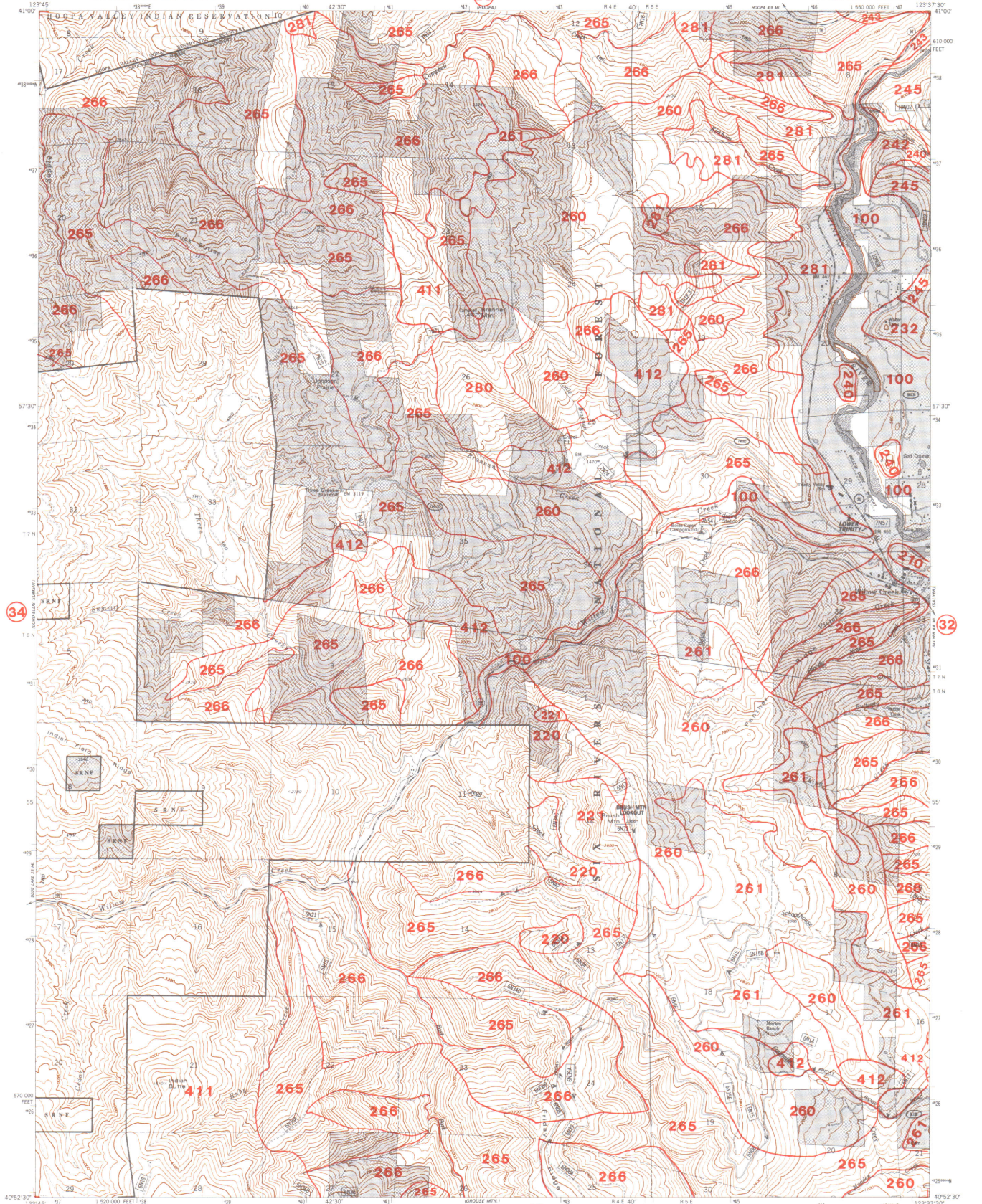
SALYER, CALIF.

1979
REVISED 1984

670-1C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

WILLOW CREEK QUADRANGLE
CALIFORNIA-HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NADA 550 5-W-12337-47
1:50,000 FEET (47)



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photography taken 1972. Field checked 1973.
Map edited 1979.

Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American Datum.
To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
96 meters east as shown by dashed corner ticks.

Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region.
Landnet revised according to additional Forest Service evidence.



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- LEGEND**
- National Forest Boundary
 - Alienated Land within the National Forest Boundary
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Protraction
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Road
 - Forest Trail
 - Locked Gate



SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

33

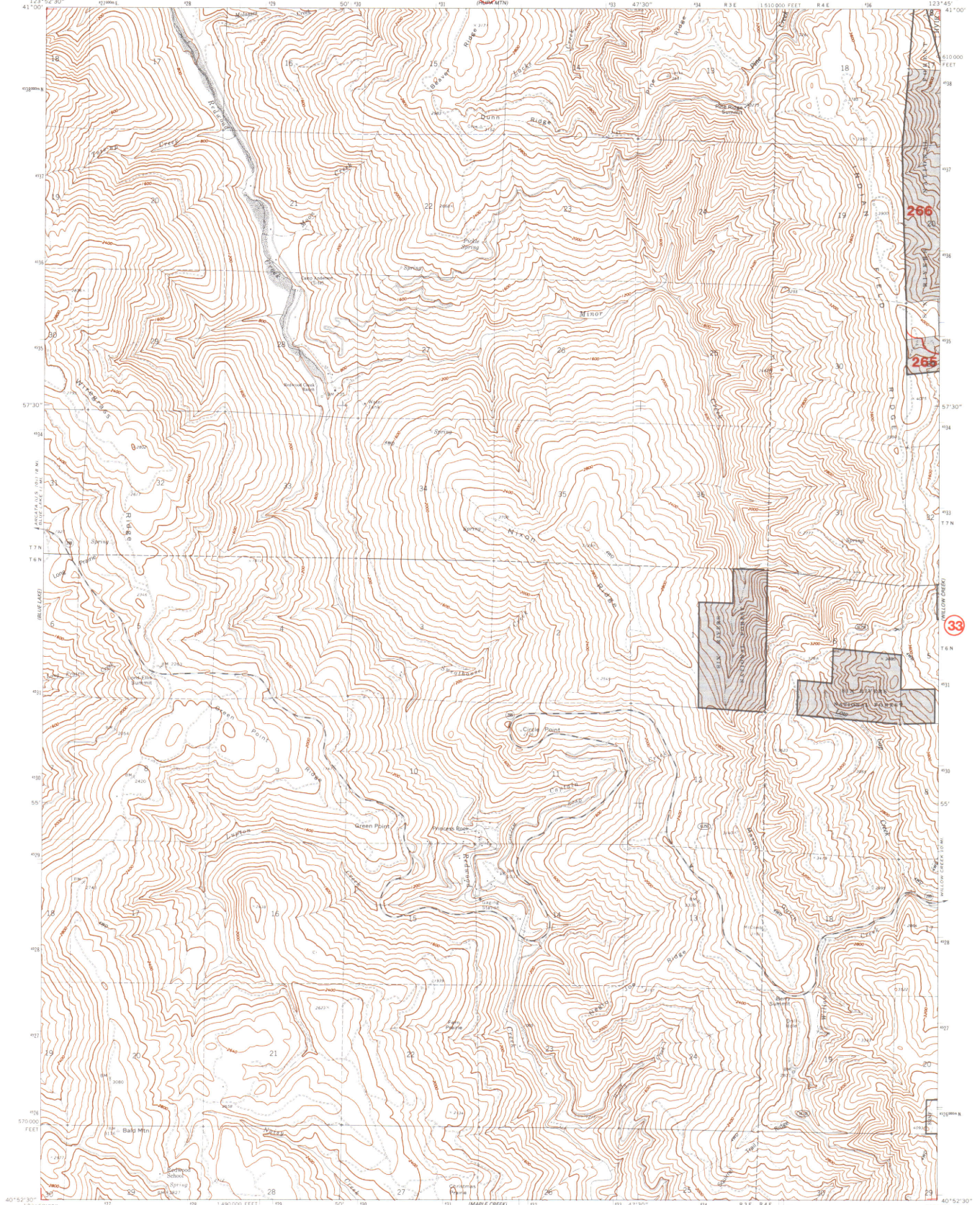
WILLOW CREEK, CALIF.
NADA 550 5-W-12337-47

1979
REVISED 1984
670-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

LORD-ELLIS SUMMIT QUADRANGLE
CALIFORNIA-HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NEAR BLUE LAKE 19 QUADRANGLE

(58)
(PUMPTON MTN)



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1968 and 1972. Field checked 1973

Projection and 10,000-foot grid ticks: California coordinate

system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid ticks,

zone 10, shown in blue. 1927 North American datum

Modification to USGS base map by the USDA Forest Service,

Geomatics Service Center, from 1982 aerial photography and

1984 correction guide furnished by the FS Pacific Southwest Region



TOWNSHIP AND SECTION LINE CLASSIFICATION	
	Surveyed, Location Reliable
	Surveyed, Location Approximate
	Unsurveyed, Protraction
LEGEND	
	National Forest Boundary
	Alienated Land within the National Forest Boundary
	Primary Highway
	Secondary Highway
	Improved Light Duty
	Unimproved Dirt
	Trail
	Road, Location Approximate
	Trail, Location Approximate
	U.S. Highway
	State Highway
	County Road
	Forest Road
	Forest Trail
	Locked Gate



34

LORD-ELLIS SUMMIT, CALIF.

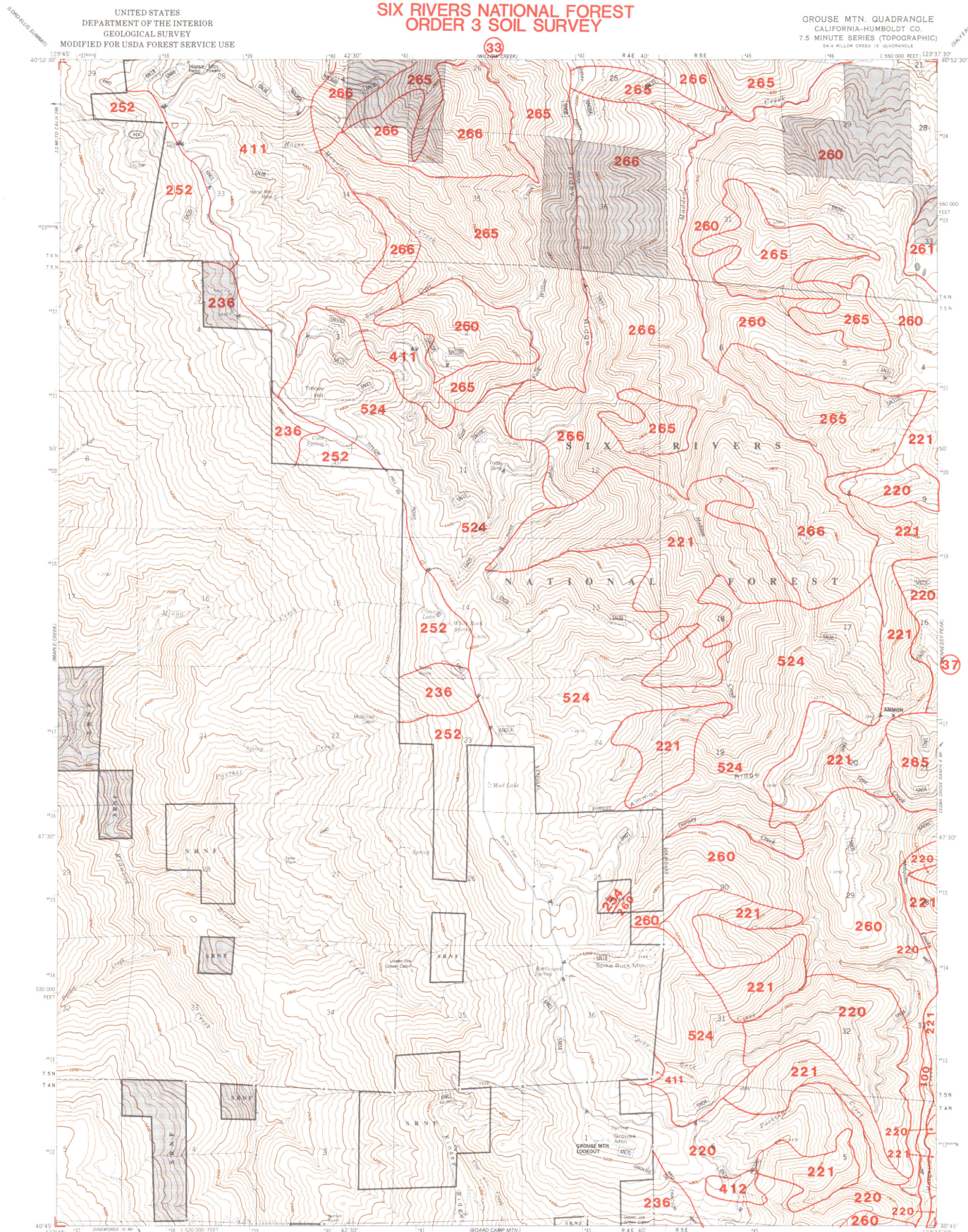
NEAR BLUE LAKE 15 QUADRANGLE
N40525-W12345/7.5

1973

REVISED 1984
671-1C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

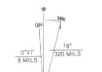
GROUSE MTN. QUADRANGLE
CALIFORNIA-HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SIX RIVERS NATIONAL FOREST



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1976. Map edited 1979.
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum.
To place on the predicted North American Datum 1983
move the projection lines 32 meters north and
96 meters east as shown by dashed corner ticks.

Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

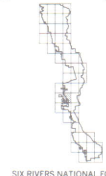
— National Forest Boundary
— Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable
— Surveyed, Location Approximate
— Unsurveyed, Protraction

— Primary Highway
— Secondary Highway
— Improved Light Duty
— Unimproved Dirt
— Trail
— Road, Location Approximate
— Trail, Location Approximate

— U.S. Highway
— State Highway
— County Road
— Forest Road
— Forest Trail
— Locked Gate



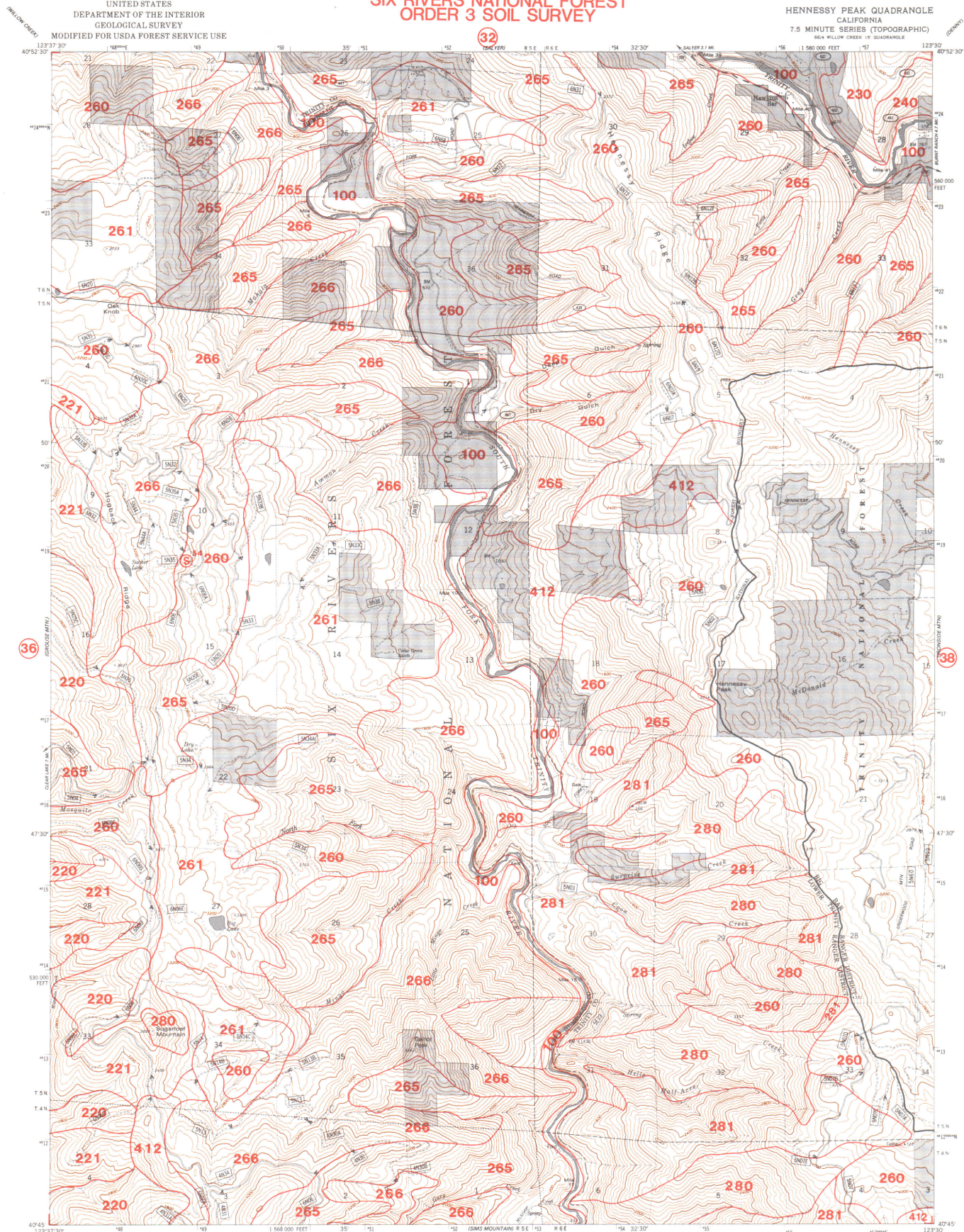
36

GROUSE MTN., CALIF.
SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

1979
REVISED 1984
670-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

HENNESSY PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SECTION 4 WILLIAM CREEK 19 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NGS/NOAA

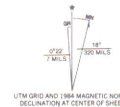
Topography by photogrammetric methods from aerial photographs taken 1972. Field checked 1973. Map edited 1979.

Projection and 10,000-foot grid ticks. California coordinate system, zone 1 (Lambert conformal conic).

1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue. 1927 North American datum. To place on the predicted North American Datum 1983, move the projection lines 20 meters north and 96 meters east as shown by dashed corner ticks.

Modification to USGS base map by the USDA Forest Service, Geomorphics Service Center, from 1982 aerial photography and 1984 correction guides furnished by the FS Pacific Southwest Region.

Landnet revised according to additional Forest Service evidence.



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Protection
- LEGEND**
- Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Road
 - Forest Trail
 - Locked Gate



SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

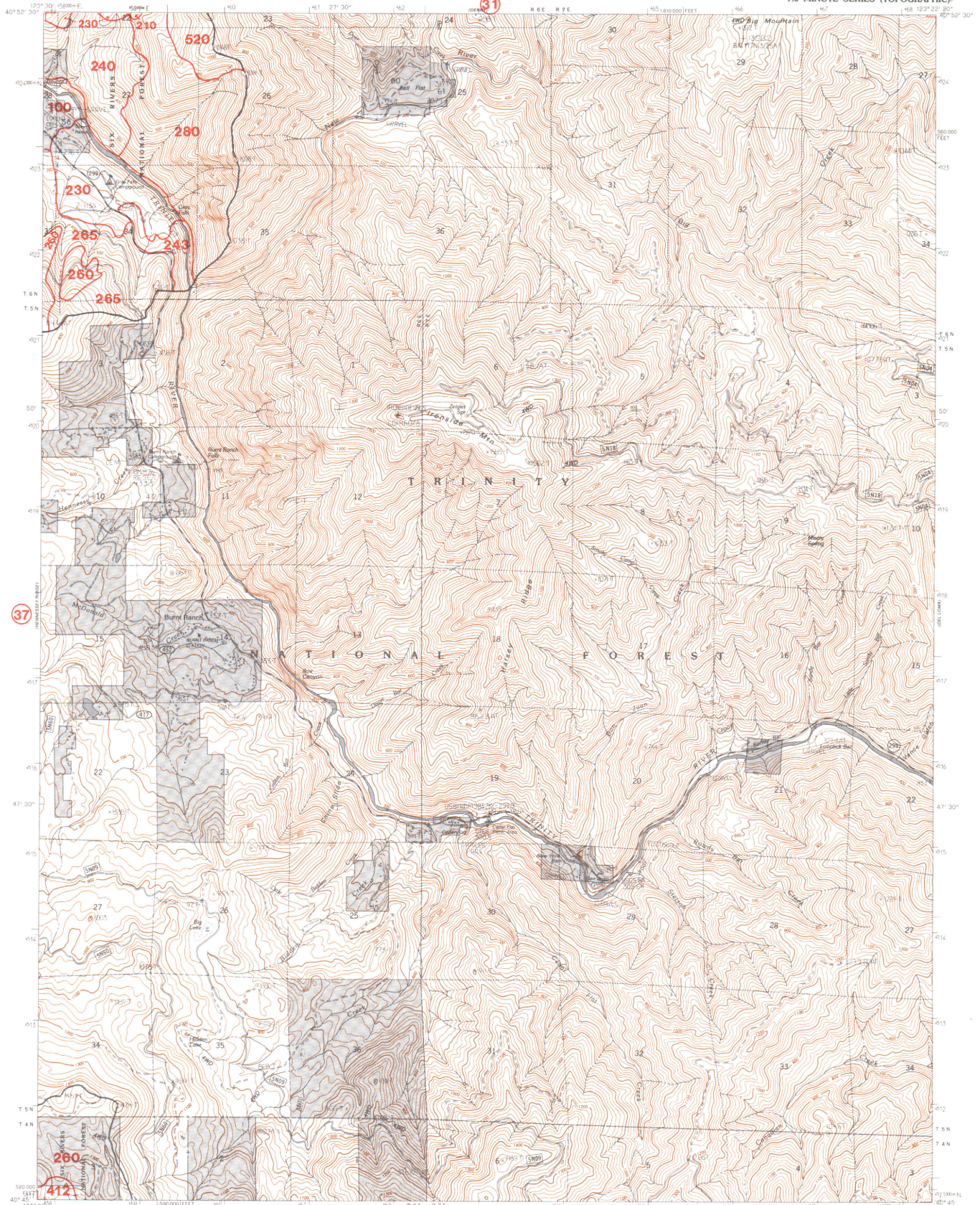
37

HENNESSY PEAK, CALIF
SECTION 4 WILLIAM CREEK 19 QUADRANGLE
NAD83-W123507.5
1979
REVISED 1984
670-4C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE

IRONSIDE MTN., CALIF.
CALIFORNIA—TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



37

31

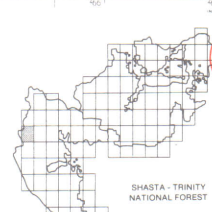
38

PROVISIONAL BASE MAP PREPARED BY U.S. GEOLOGICAL SURVEY
CONTROL BY: USGS, NORWAD
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN: 1972
FIELD CHECKED: 1974
PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
GRID: 100 METER UNIVERSAL TRANSVERSE MERCATOR
ZONE: 18
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
VERTICAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection line as shown by dashed corner ticks
(19 meters north/95 meters east)
Modification to USGS provisional base map by the U.S.
Forest Service, Geomorphology Service Center from 1982 aerial
photography and 1983 correction guidelines furnished by the
USFS Pacific Southwest Region

CONTOUR INTERVAL 20 METERS
ELEVATIONS SHOWN TO THE NEAREST METER
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by 0.3048

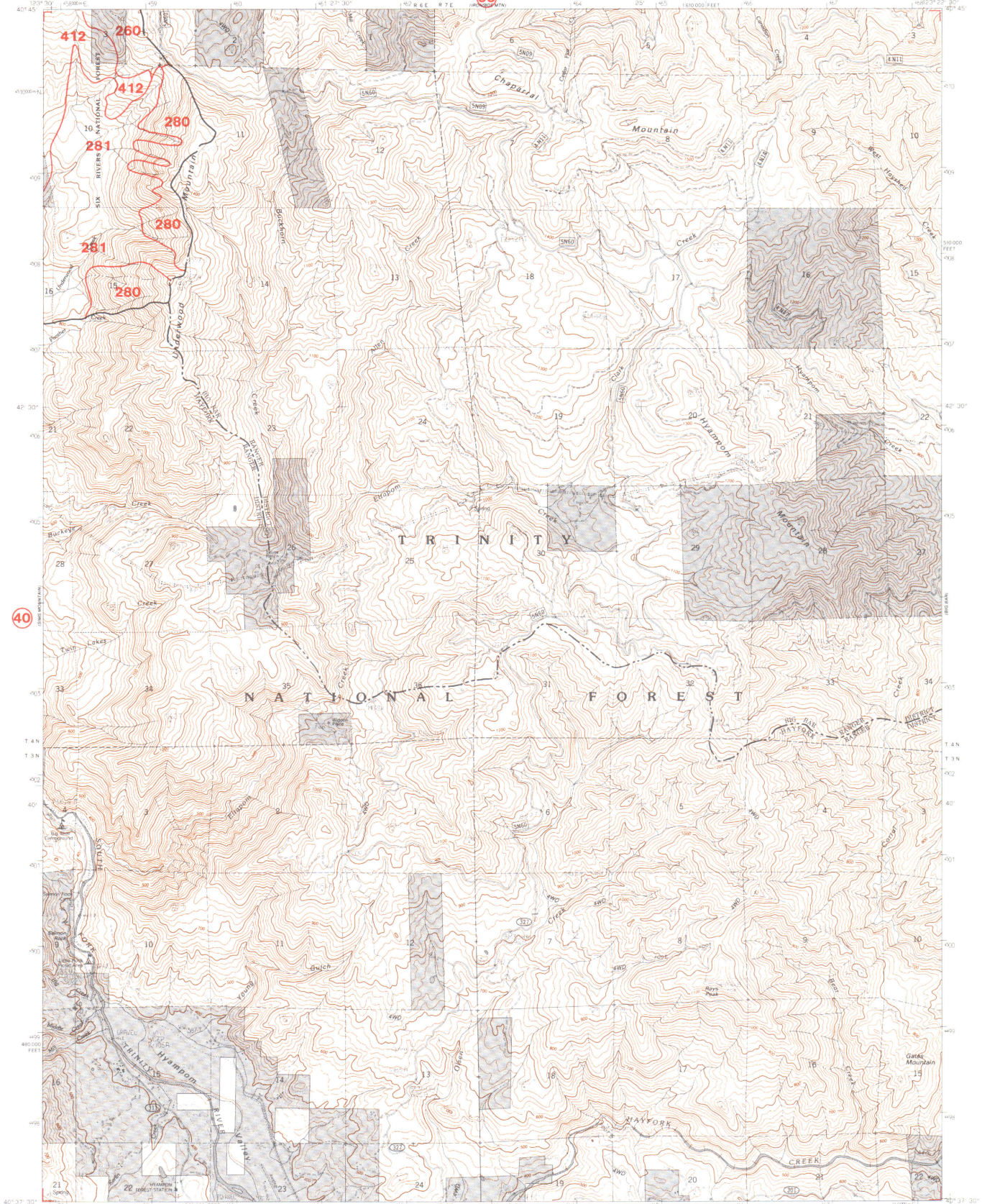
LEGEND

— National Forest Boundary	— Primary Highway	US Highway
— Non-Forest Service Land within Proclaimed Boundary as of 1983	— Secondary Highway	State Highway
TOWNSHIP AND SECTION LINE CLASSIFICATION	— Improved Light Duty	County Road
— Surveyed Location Reliable	— Unimproved Dirt	Forest Highway
— Surveyed Location Approximate	— Trail	Forest Road
— Unsurveyed, Protraction	— Approximate Road	Forest Trail
	— Approximate Trail	

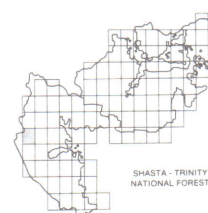
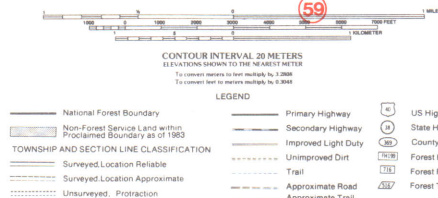
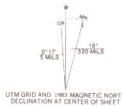


IRONSIDE MTN., CALIF.
PROVISIONAL EDITION 1982
NAD83 W 12322.573
REVISED 1983
669-3C

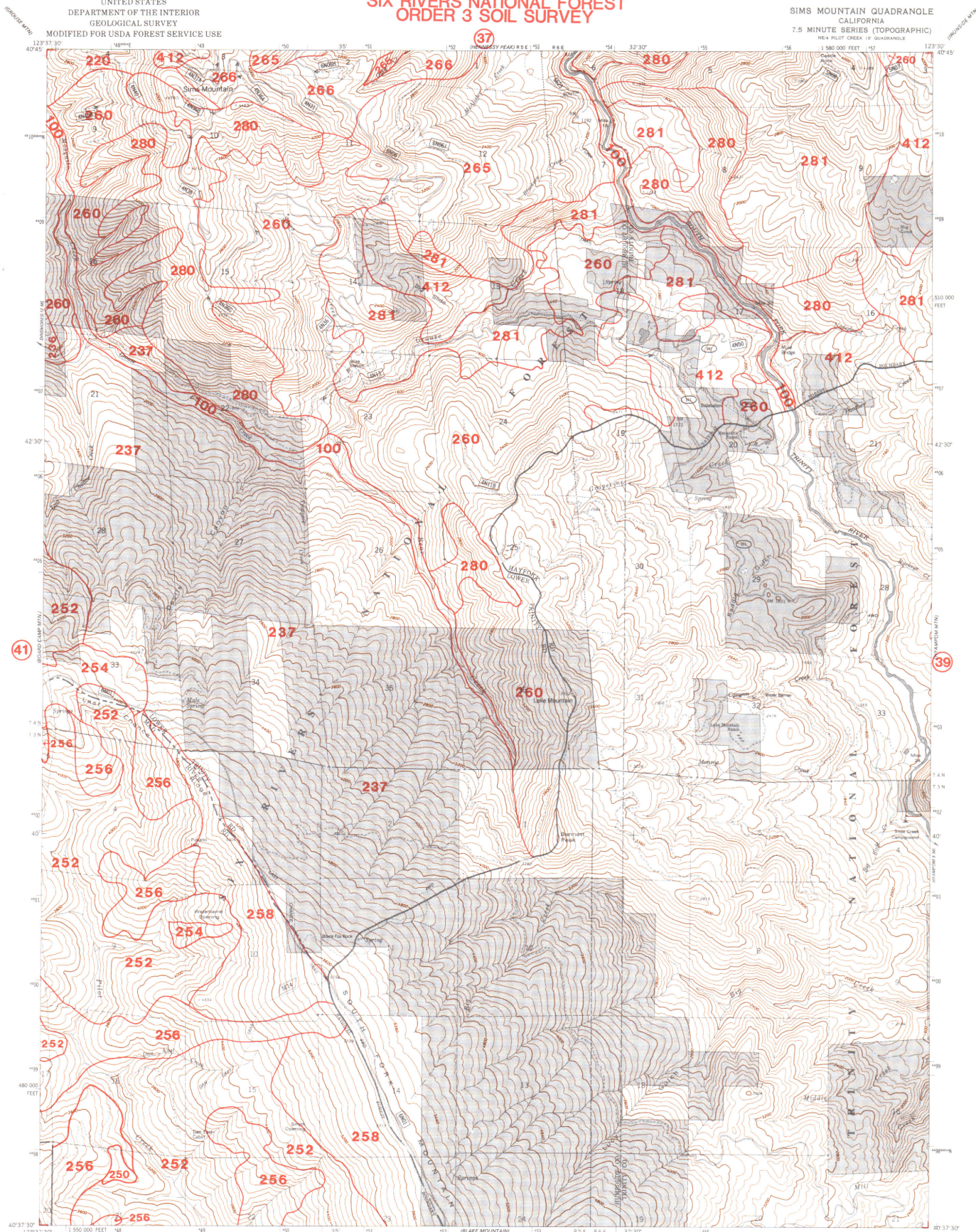
SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

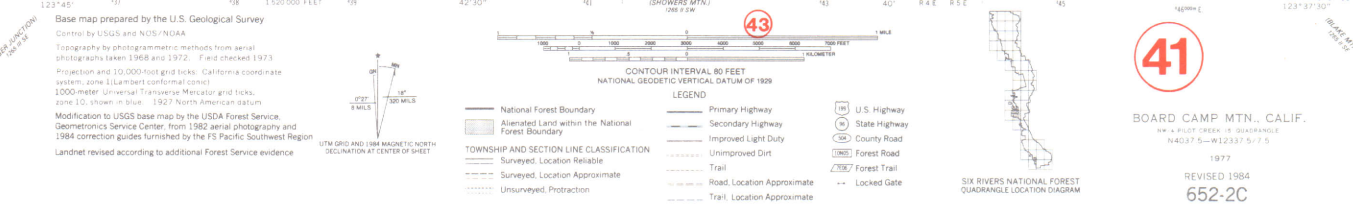


PROVISIONAL BASE MAP PREPARED BY U.S. GEOLOGICAL SURVEY
CONTROL BY U.S. GEOLOGICAL SURVEY
CORRECTED FROM AERIAL PHOTOGRAPHS TAKEN 1966
FIELD CHECKED 1966
PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
GRID: 100-METER UNIVERSAL TRANSVERSE MERCATOR
TOWNSHIP AND SECTION LINE CLASSIFICATION
To place on the predicted North American Datum of 1983,
move the projection line as shown by dashed corner ticks
(19 meters north 95 meters east)
Modification to USGS provisional base map by the U.S.
Forest Service, Geomorphics Service Center from 1982 aerial
photography and 1983 correction guides furnished by the
USFS Pacific Southwest Region



SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY





MAD RIVER BUTTES QUADRANGLE
CALIFORNIA - HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

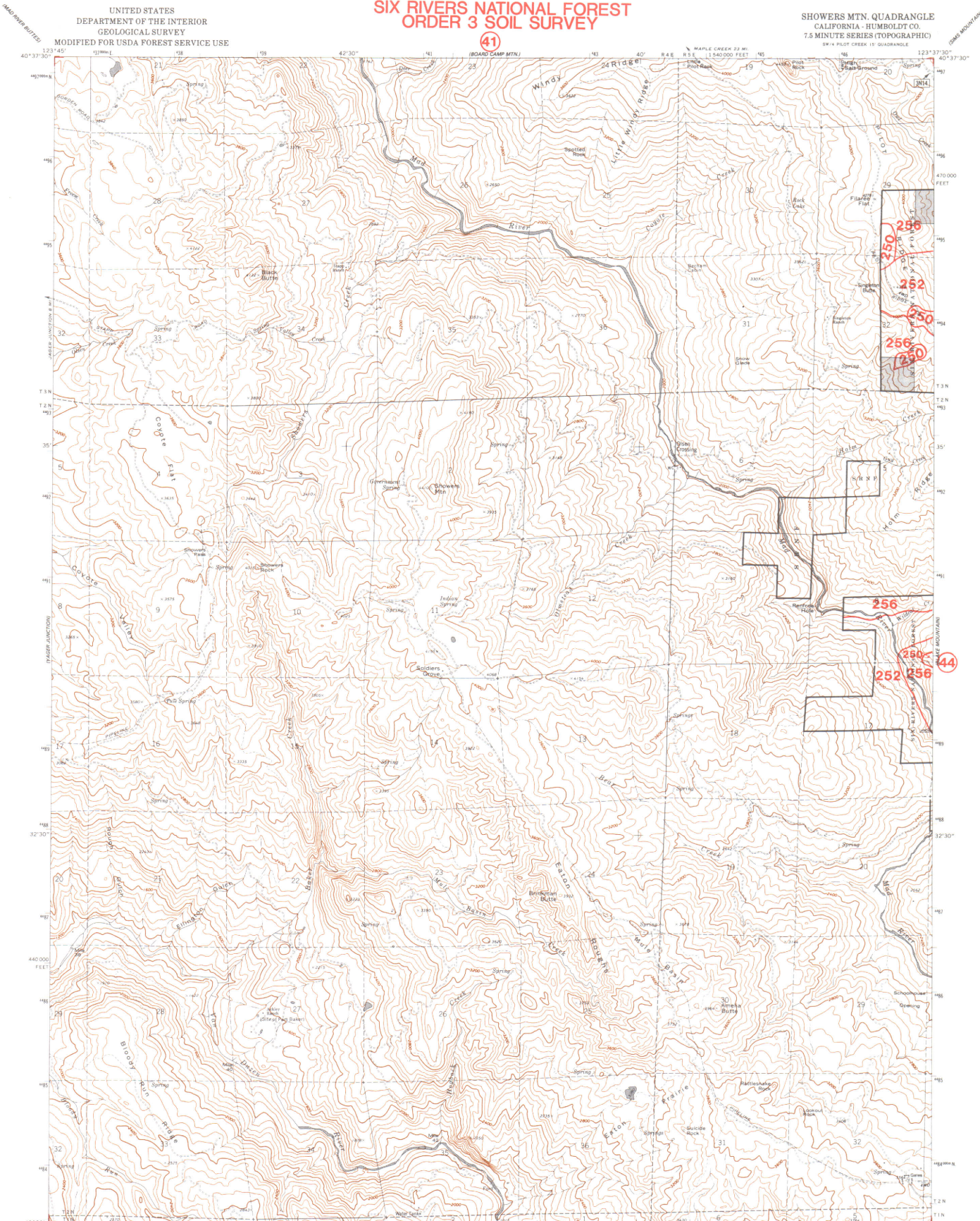
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SHOWERS MTN. QUADRANGLE
CALIFORNIA - HUMBOLDT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 1/4 PLUT CREEK 15 QUADRANGLE

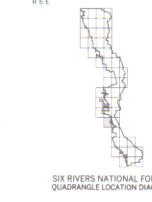
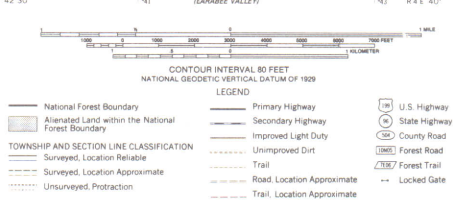
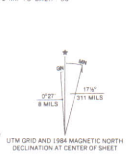
(41)

(44)

(43)

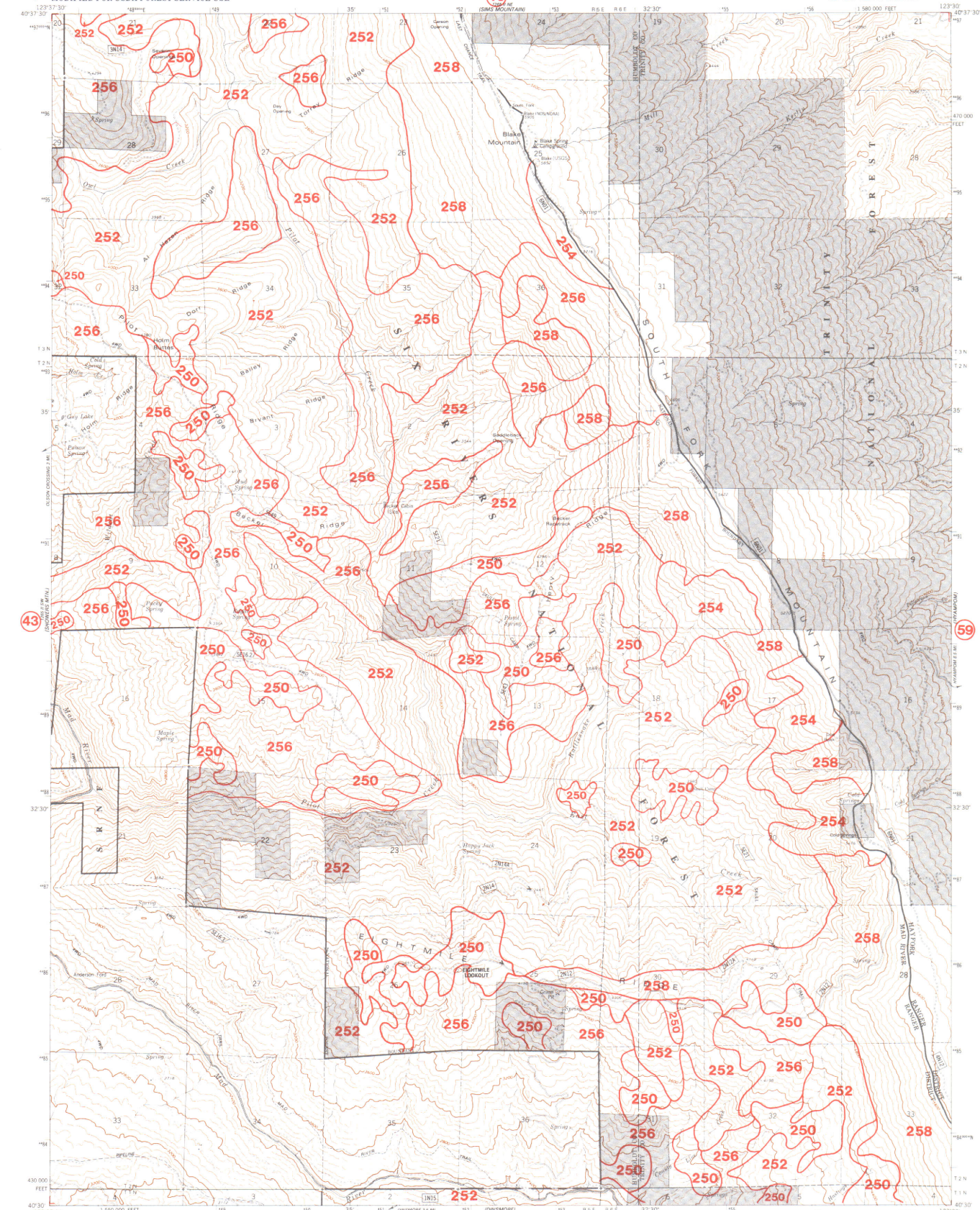


Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1968 and 1972. Field checked 1973.
Projection and 30,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum.
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

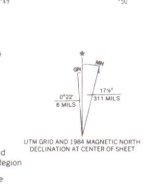


SHOWERS MTN., CALIF.
SW 1/4 PLUT CREEK 15 QUADRANGLE
N4030-W12337.5-7.5
1978
REVISED 1984
652-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY



Base map prepared by the U.S. Geological Survey
Control by USGS and NGS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1973. Map edited 1979
Projection and 10,000 foot grid ticks. California coordinate
system, zone 1 (Lambert conformal cone).
1000-meter Universal Transverse Mercator grid ticks.
zone 10, shown in blue. 1927 North American datum.
To place on the predicted North American Datum 1983
now the projection lines 15 meters north and
96 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service,
Geometrics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

- National Forest Boundary
- Altered Land within the National Forest Boundary
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Unsurveyed, Protraction
- Primary Highway
- Secondary Highway
- Improved Light Duty
- Unimproved Dirt
- Trail
- Road, Location Approximate
- Trail, Location Approximate
- U.S. Highway
- State Highway
- County Road
- Forest Road
- Forest Trail
- Locked Gate



44

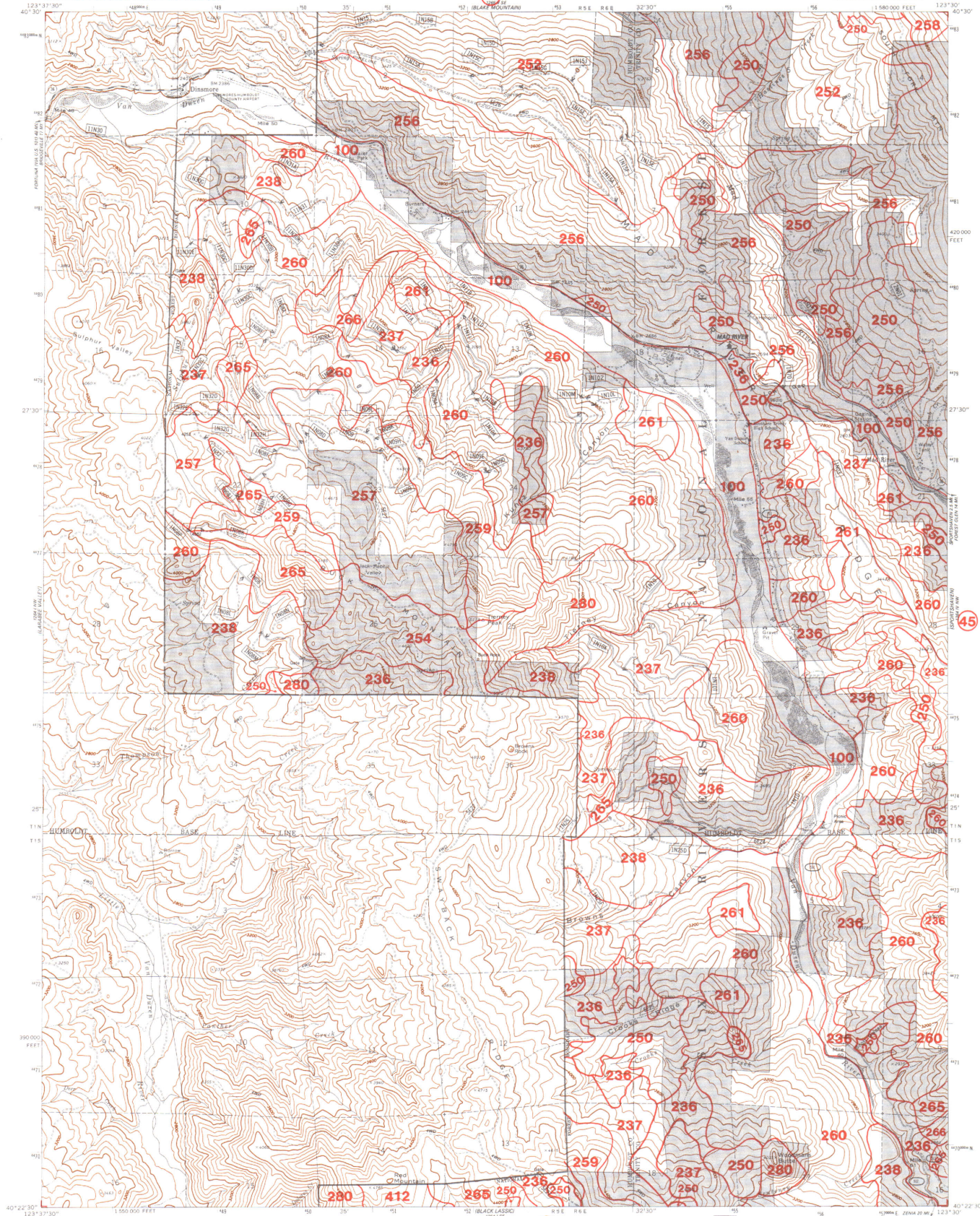
BLAKE MOUNTAIN, CALIF.
SEA PILOT CREEK 15 QUADRANGLE
N4030-W12330/7.5
1979
REVISED 1984
652-4C

SHASTA - TRINITY
NATIONAL FOREST

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

DINSMORE QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
N.E. 4 BLOCKS OF 15' QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

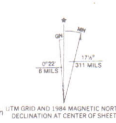


Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1958 and 1972. Field checked 1973
Map edited 1977

Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1,000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum

Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region



National Forest Boundary
— Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION
— Surveyed, Location Reliable
— Surveyed, Location Approximate
— Unsurveyed, Protraction

LEGEND
— Primary Highway
— Secondary Highway
— Improved Light Duty
— Unimproved Dirt
— Trail
— Road, Location Approximate
— Trail, Location Approximate

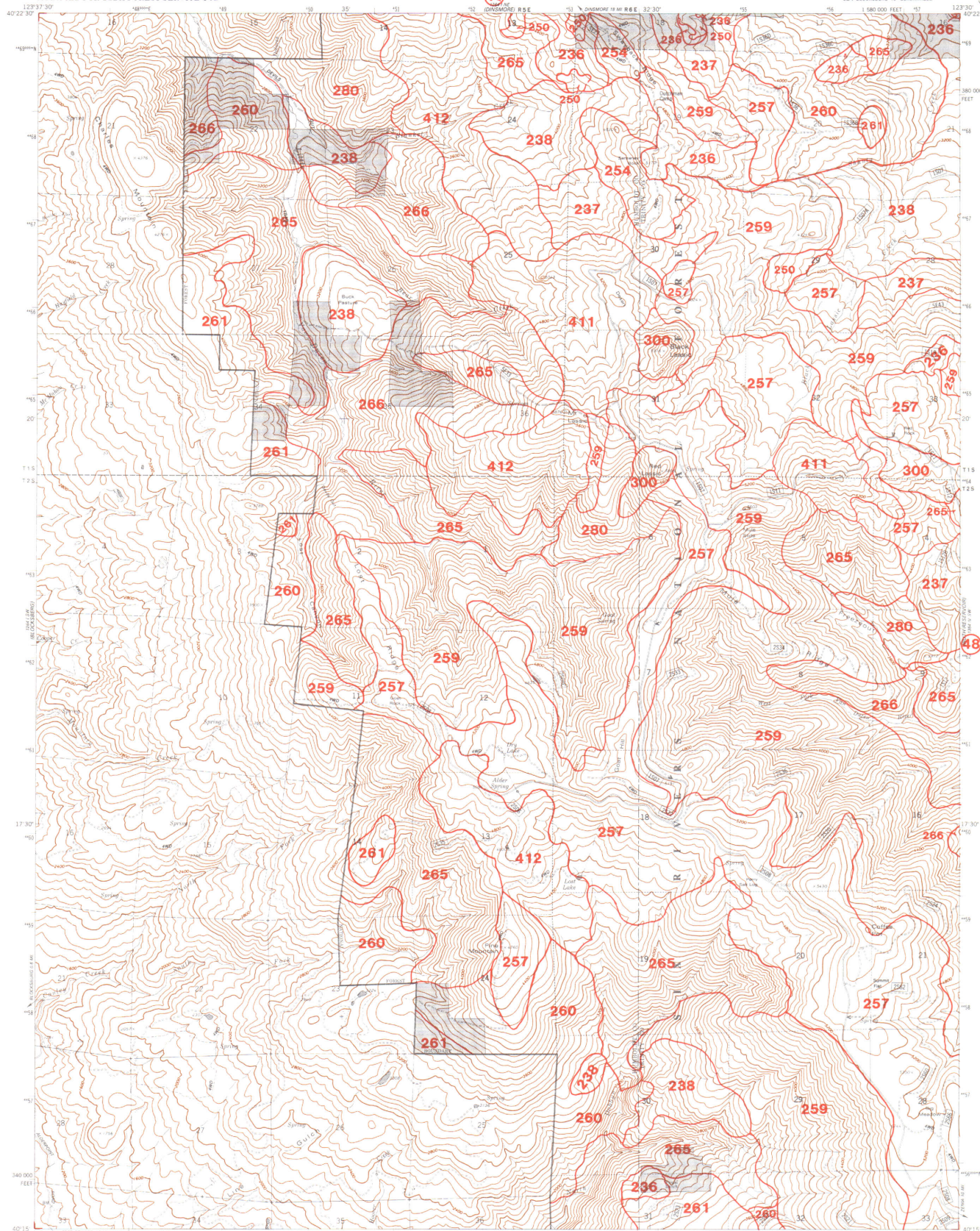
— U.S. Highway
— State Highway
— County Road
— Forest Road
— Forest Trail
— Locked Gate



46

DINSMORE, CALIF.
N.E. 4 BLOCKS OF 15' QUADRANGLE
NAD82 5 - W123307.5
1977
REVISED 1984
634-1C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1973. Map edited 1979
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landmark revised according to additional Forest Service evidence

UTM GRID AND 1984 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

LEGEND

- National Forest Boundary
- Alienated Land within the National Forest Boundary
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Unsurveyed, Protraction
- Primary Highway
- Secondary Highway
- Improved Light Duty
- Unimproved Dirt
- Trail
- Road, Location Approximate
- Trail, Location Approximate
- U.S. Highway
- State Highway
- County Road
- Forest Road
- Forest Trail
- Locked Gate

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

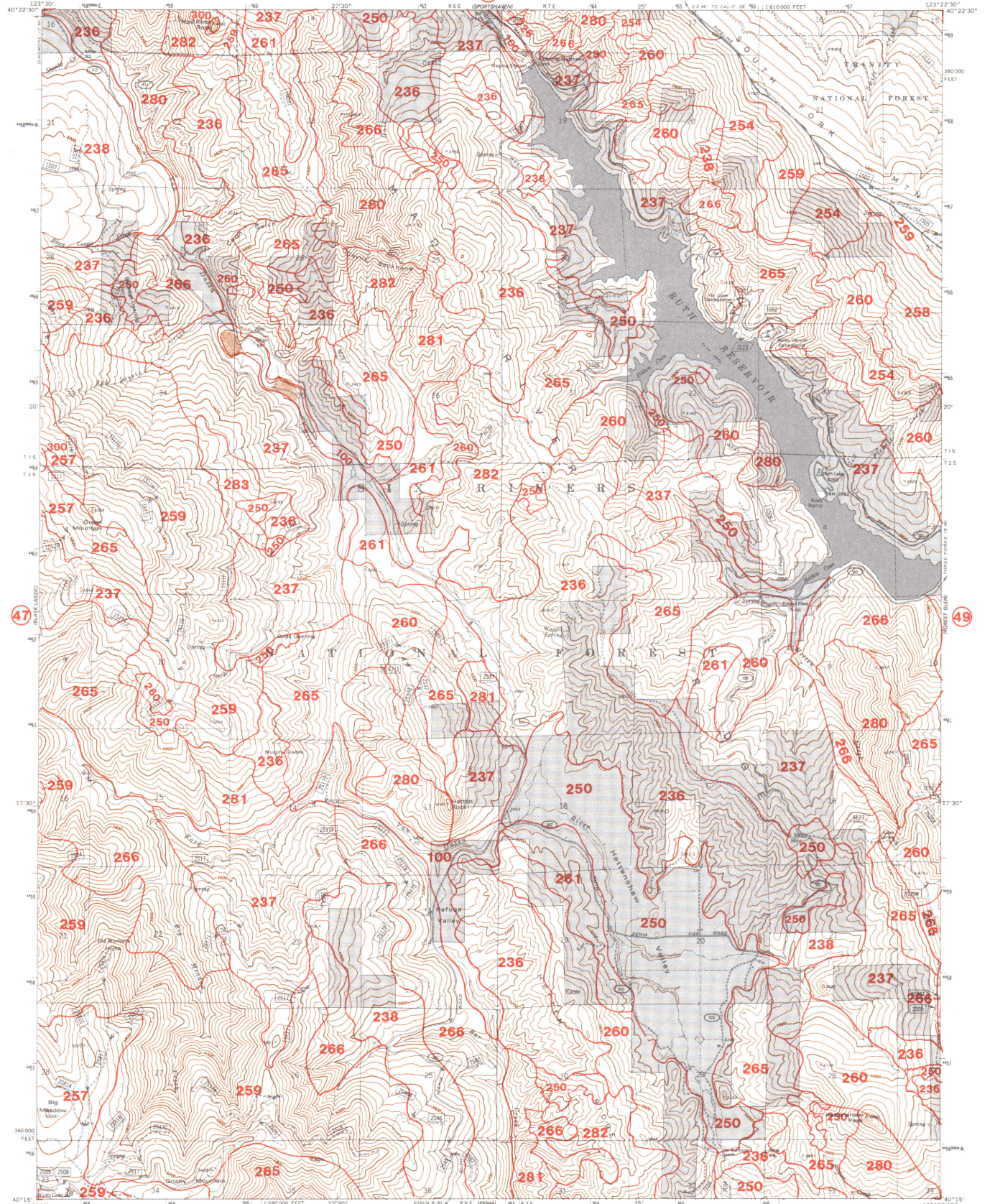


47

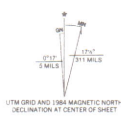
SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

RUTH RESERVOIR QUADRANGLE
CALIFORNIA - TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
89-4 POCKET PEAK 19 QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NGS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1973. Map edited 1978
Projection and 10,000-foot grid ticks: California Coordinate
System, zone 1 (Lambert Conformal Conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 40-FOOT CONTOURS
NATIONAL GEODETIC VERTICALE DATUM OF 1929

LEGEND

— National Forest Boundary
— Alienated Land within the National Forest Boundary
— Township and Section Line Classification
— Surveyed, Location Approximate
— Unsurveyed, Protraction

— Primary Highway
— Secondary Highway
— Improved Light Duty
— Unimproved Dirt
— Trail
— Road, Location Approximate
— Trail, Location Approximate

— U.S. Highway
— State Highway
— County Road
— Forest Road
— Forest Trail
— Locked Gate



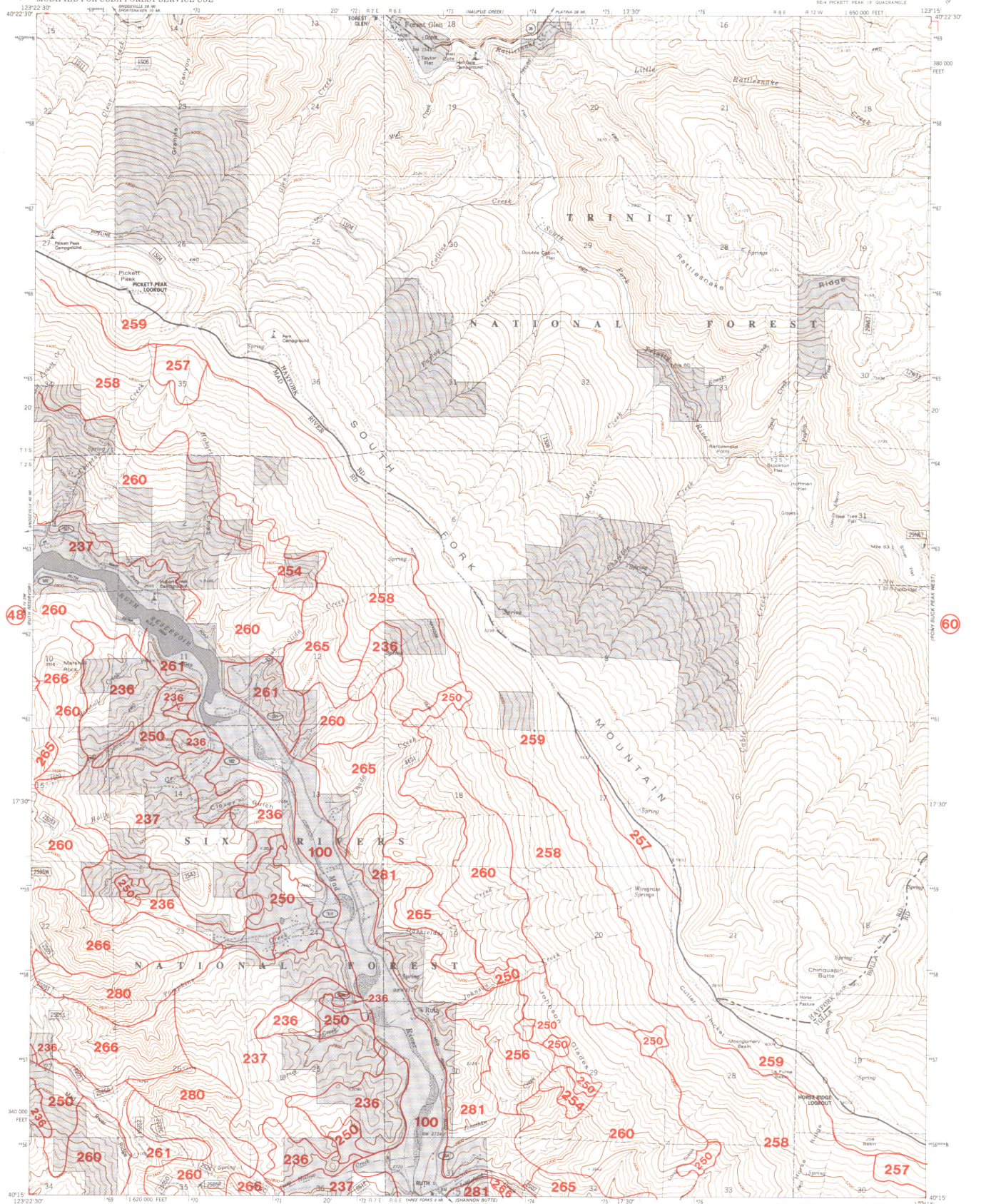
48

RUTH RESERVOIR, CALIF.
89-4 POCKET PEAK 19 QUADRANGLE
N4015-W12322.5/7.5
1978
REVISED 1984
633-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

FOREST GLEN QUADRANGLE
CALIFORNIA—TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE-4 PICKETT PEAK-19 QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1973
Map edited 1979
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum.
Fine red dashed lines indicate selected fence and field lines where
generally visible on aerial photographs. This information is unchecked
Modification to USGS base map by the USDA Forest Service,
Geometrics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 80 FEET
NATIONAL GEOGRAPHIC VERTICAL DATUM OF 1929

LEGEND

— National Forest Boundary	— Primary Highway	— U.S. Highway
— Alienated Land within the National Forest Boundary	— Secondary Highway	— State Highway
— Township and Section Line Classification	— Surveyed Location Reliable	— County Road
— Surveyed Location Approximate	— Improved Light Duty	— Forest Road
— Unsurveyed, Protection	— Unimproved Dirt	— Forest Trail
	— Trail	— Locked Gate
	— Road, Location Approximate	
	— Trail, Location Approximate	



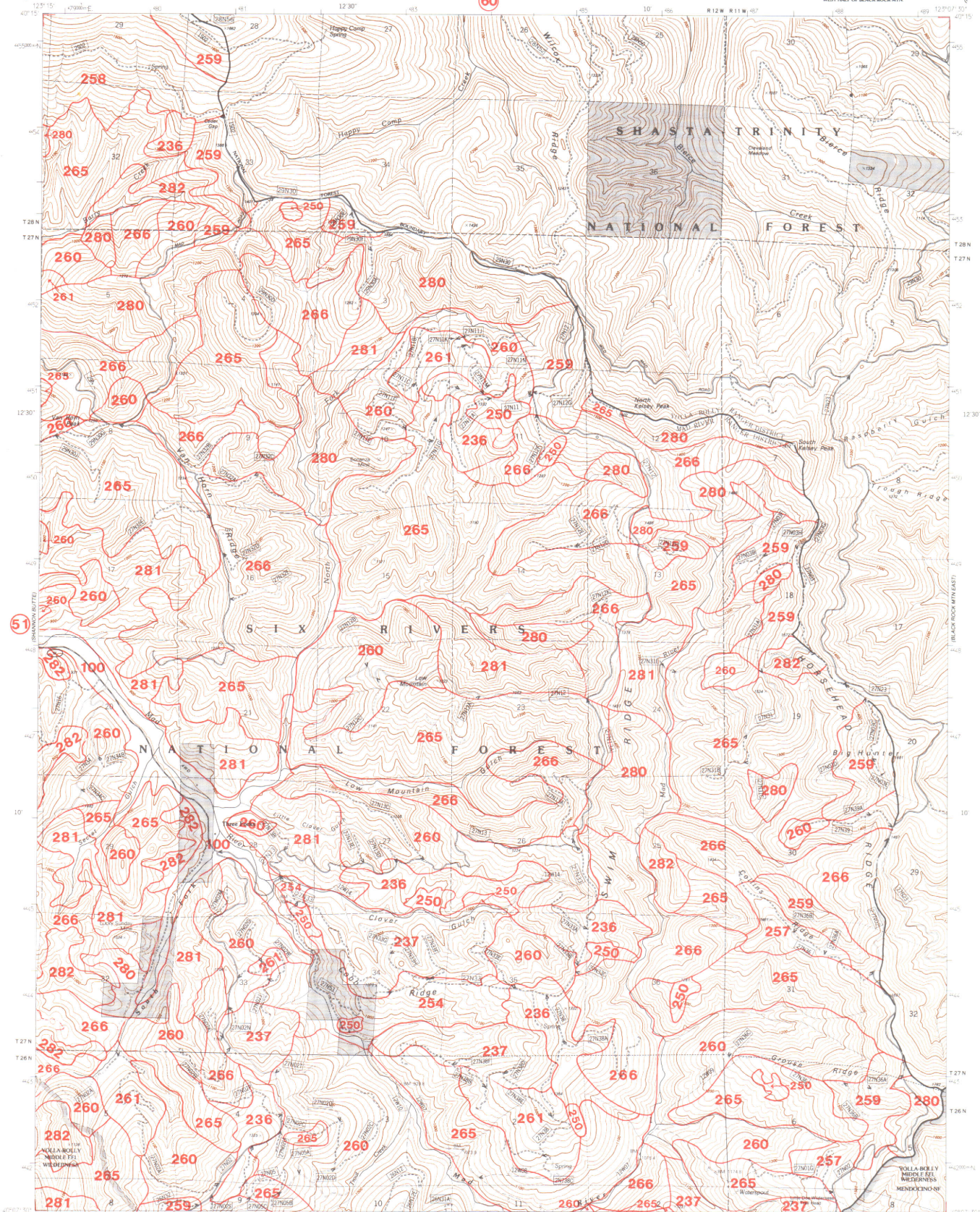
49

FOREST GLEN, CALIF.
SE-4 PICKETT PEAK-19 QUADRANGLE
14015—W12315-7.5

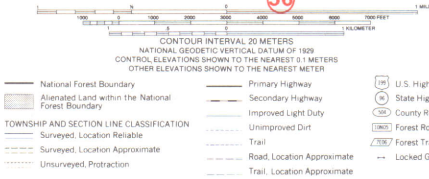
1979
REVISED 1984
633-4C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

BLACK ROCK MTN. WEST QUADRANGLE
CALIFORNIA-TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WEST HALF OF BLACK ROCK MTN.



Base map prepared by the U.S. Geological Survey
in cooperation with State of California
Control by USGS and NOS/NOAA
Compiled by photogrammetric methods from aerial
photographs taken 1976. Field checked 1978
Map edited 1981
Projection and 1000-meter grid, zone 10,
Universal Transverse Mercator
10,000-foot grid ticks based on California coordinate
system, zone 1. 1927 North American Datum
Modification and scale conversion of 1:25,000-scale USGS
Metric Base Map by the USDA Forest Service, Geomatics
Service Center, from 1982 aerial photography and 1984
correction guides furnished by the FS Pacific Southwest Region
Landfill revised according to additional Forest Service evidence



50

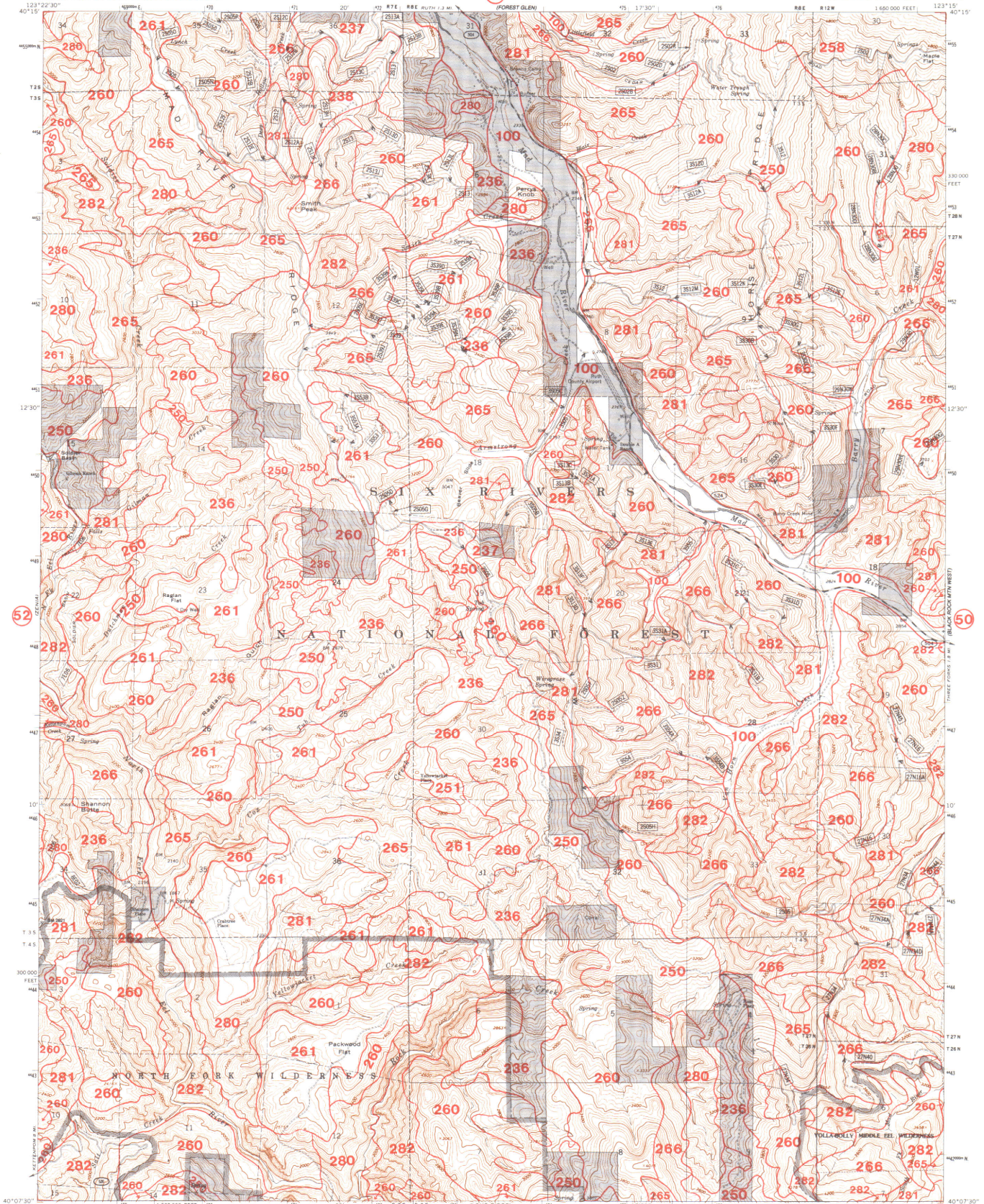
BLACK ROCK MTN. WEST
WEST HALF OF BLACK ROCK MTS.
METRIC EDITION 1981
NAD80 W12307 5.7.5
REVISED 1984
614-2C

SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

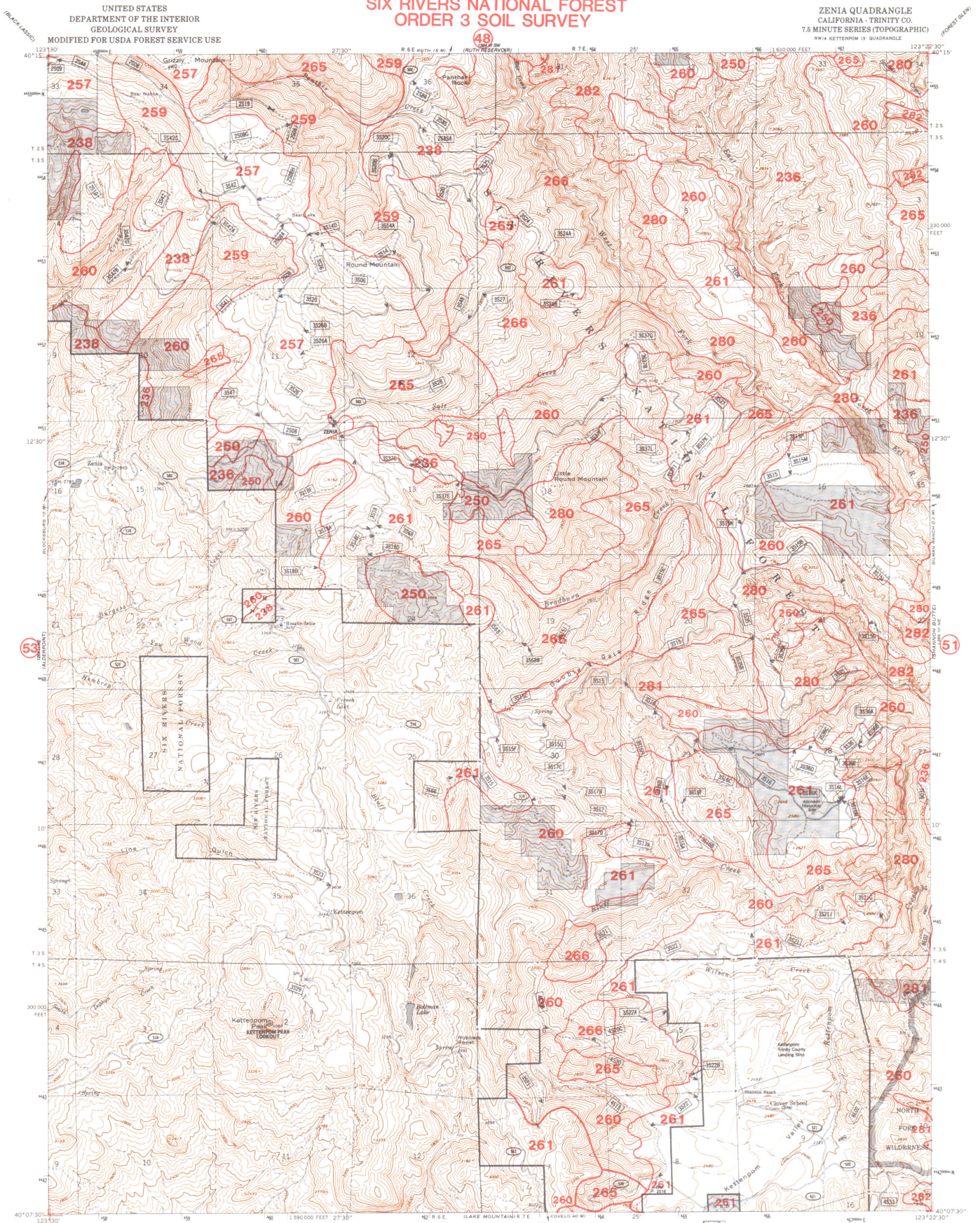
SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

SHANNON BUTTE QUADRANGLE
CALIFORNIA - TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NECA KETTERHORN 15 QUADRANGLE

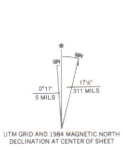
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



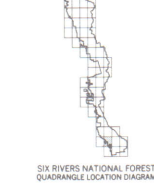
SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY



Base map prepared by the U.S. Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial
photographs taken 1964. Field checked 1967
Polyconic projection. 1927 North American datum
10,000 foot grid based on California coordinate system, zone 1
1,000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



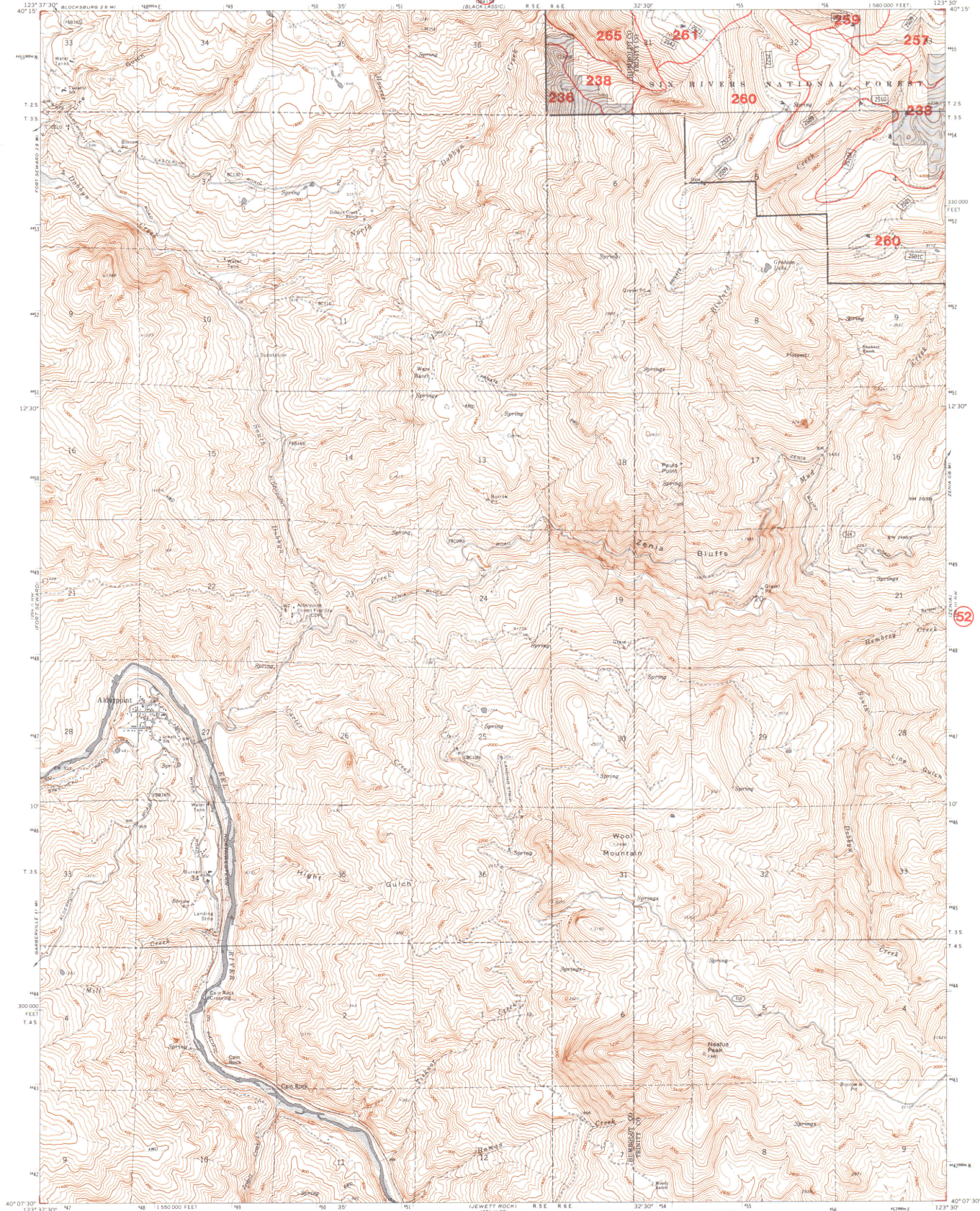
- Legend
- National Forest Boundary
 - Alienated Land within the National Forest Boundary
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Road, Location Approximate
 - Trail, Location Approximate
 - U.S. Highway
 - State Highway
 - County Road
 - Forest Road
 - Forest Trail
 - Locked Gate
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Unsurveyed, Projection
- CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
DATUM IS MEAN SEA LEVEL



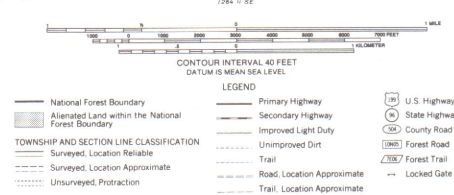
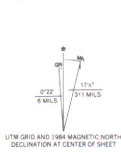
ZENIA, CALIF.
NW 1/4 KETTERPOW 15 QUADRANGLE
NAD83 7.5—W12322.5/7.5
1967
REVISED 1984
615-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY

ALDERPOINT QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 ALDERPOINT 15 QUADRANGLE

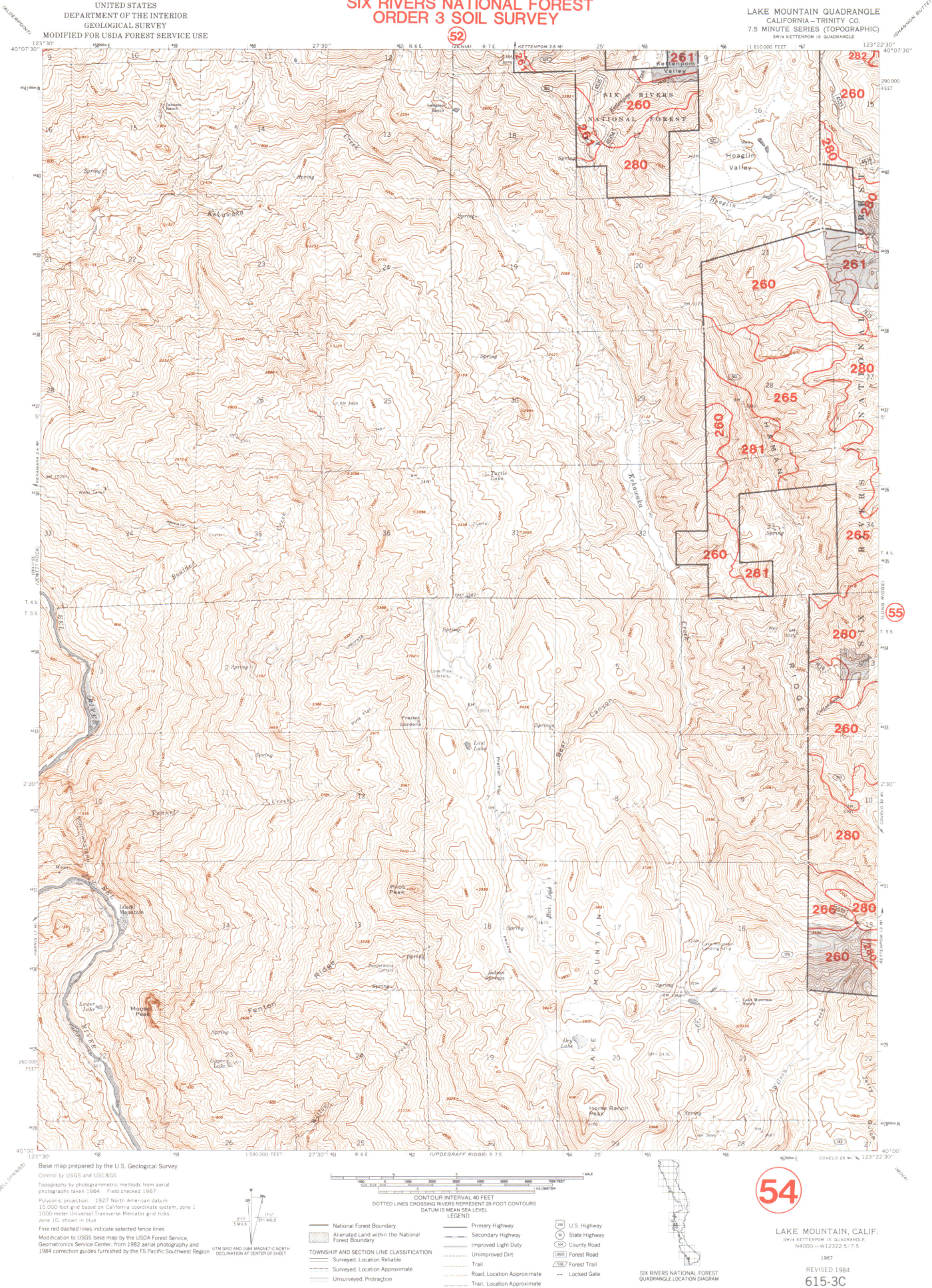


Base map prepared by the U.S. Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial
photographs taken 1968. Field checked 1969
Projection and 10,000 foot grid ticks: California Coordinate
System, zone 1 (Lambert Conformal Conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service,
Geomatics Service Center, from 1982 aerial photography and
1984 correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



53

ALDERPOINT, CALIF.
NE 4 ALDERPOINT 15 QUADRANGLE
N4007 5-W12330/7.5
1969
REVISED 1984
616-1C



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CLASSIFIED FOR USDA FOREST SERVICE USE

LONG RIDGE QUADRANGLE
CALIFORNIA-TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 KETTENPOM 15' QUADRANGLE



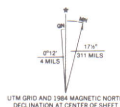
Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1964. Field checked 1967

Polyconic projection. 1927 North American datum 10,000-foot grid based on California coordinate system, zone 1 1000-meter Universal Transverse Mercator grid ticks,

Numbered tracts are shown within the diminished portion of the Round Valley Indian Reservation

Modification to USGS base map by the USDA Forest Service, Geomatrix Service Center, from 1982 aerial photography and 1984 correction guides furnished by the FS Pacific Southwest Region. Landnet revised according to additional Forest Service evidence



CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

LEGEND

National Forest Boundary
 — National Forest Boundary
 --- Alienated Land within the National Forest Boundary

Primary Highway
 — Primary Highway
 --- Improved Light Duty
 --- Unimproved Dirt
 --- Trail

ROAD LOCATION APPROXIMATE
 --- Road Location Approximate
 --- Trail Location Approximate

TOWNSHIP AND SECTION LINE CLASSIFICATION
 --- Surveyed Location Reliable
 --- Surveyed Location Approximate
 --- Unserved, Protraction

U.S. Highway
 199 U.S. Highway
 State Highway
 524 County Road
 3807
 3376 Forest Trail
 Locked Gate

SIX RIVERS NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

55

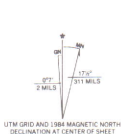
LONG RIDGE, CALIF.
SE/4 KETTENPOM 15' QUADRANGLE
N4000—W12315/7.5
1967
REVISED 1984
615-4C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

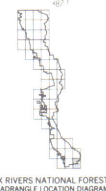
FOUR CORNERS ROCK WEST QUADRANGLE
CALIFORNIA: TRINITY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WEST HALF OF FOUR CORNERS ROCK



Base map prepared by the U.S. Geological Survey
in cooperation with State of California
Control by USGS, NOS/NOAA and USCE
Compiled by photogrammetric methods from aerial
photographs taken 1976. Field checked 1978
Map edited 1981
Projection and 1000-meter grid, zone 10,
Universal Transverse Mercator
10,000-foot grid ticks based on California coordinate
system, zone 1. 1927 North American Datum
Modification and scale conversion of 1:25,000-scale USGS
Metric Base Map by the USDA Forest Service, Geomatics
Service Center, from 1982 aerial photography and 1984
correction guides furnished by the FS Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- CONTOUR INTERVAL 20 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1989
CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER
OTHER ELEVATIONS SHOWN TO THE NEAREST METER
- | | | | |
|---|--|---|-----------------------------|
| — | National Forest Boundary | — | Primary Highway |
| — | Alienated Land within the National Forest Boundary | — | Secondary Highway |
| — | TOWNSHIP AND SECTION LINE CLASSIFICATION | — | Improved Light Duty |
| — | Surveyed, Location Reliable | — | Unimproved Dirt |
| — | Surveyed, Location Approximate | — | Trail |
| — | Unsurveyed, Protraction | — | Road, Location Approximate |
| — | | — | Trail, Location Approximate |
- U.S. Highway
State Highway
County Road
Forest Road
Forest Trail
Locked Gate



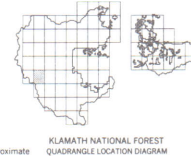
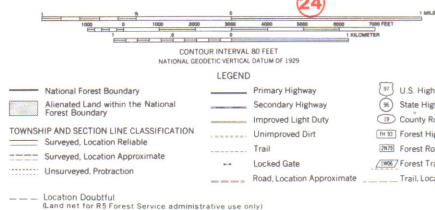
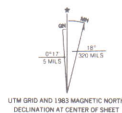
56
FOUR CORNERS ROCK WEST, CALIF.
METRIC EDITION 1981
NAD80: W12307.5/7.5
REVISED 1/1984
614-3C

SIX RIVERS NATIONAL FOREST ORDER 3 SOIL SURVEY

SOMES BAR QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW 1/4 CORNER OF SALMON R. QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Map edited 1979
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Land lines are omitted because of insufficient data
Modification by USGS base map by the Geomatics Service
Center from 1982 aerial photography and 1983 correction
guides furnished by the Pacific Southwest Region



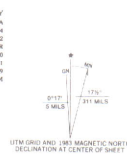
57

SOMES BAR, CALIF.
NW 1/4 CORNER OF SALMON R. QUADRANGLE
N4122.5-W12322.5/7.5
1983
DMA 1386 IV NW-SERIES 1985
703-2C

SIX RIVERS NATIONAL FOREST
ORDER 3 SOIL SURVEY



PROVISIONAL BASE MAP PREPARED BY U.S. GEOLOGICAL SURVEY
CONTROL BY USGS, NOS-NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1974
FIELD CHECKED 1974 MAP EDITED 1982
PROJECTION UNIVERSAL TRANSVERSE MERCATOR
GRID 100 METER UNIVERSAL TRANSVERSE MERCATOR
1000 FOOT STATE GRID TICS CALIFORNIA ZONE 1
VERTICAL DATUM NATIONAL GEODESIC VERTICAL DATUM OF 1985
HORIZONTAL DATUM 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection line as shown by dashed corner ticks
(19 meters north 95 meters east)
Modification to USGS provisional base map by the U.S.
Forest Service, Geomorphics Service Center from 1982 aerial
photography and 1983 correction guides furnished by the
USFS Pacific Southwest Region

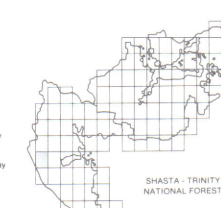


CONTOUR INTERVAL 20 METERS
ELEVATION MEASUREMENT TO THE NEAREST 100 FEET
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by 0.3048

LEGEND

— National Forest Boundary	— Primary Highway
— Non-Forest Service Land within Proclaimed Boundary as of 1983	— Secondary Highway
— TOWNSHIP AND SECTION LINE CLASSIFICATION	— Improved Light Duty
— Surveyed Location Reliable	— Unimproved Dirt
— Surveyed Location Approximate	— Trail
— Unsurveyed, Protraction	— Approximate Road
	— Approximate Trail

US Highway
State Highway
County Road
Forest Highway
Forest Road
Forest Trail



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HYAMPOM, CALIF.
PROVISIONAL EDITION 1982
N4830 W12322.5 7.5
651-3C
REVISED 1987



BASE MAP PREPARED BY U.S. GEOLOGICAL SURVEY
CONTROL BY U.S. GEOLOGICAL SURVEY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN
FIELD CHECKED BY U.S. GEOLOGICAL SURVEY
PROJECTION - UTM
VERTICAL DATUM - 1985
HORIZONTAL DATUM - 1985
To place on the predicted North American Datum of 1985,
move the projection line as shown by dashed corner ticks
(19 meters north 95 meters east)

UTM GRID AND 1985 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 30 METERS
ELEVATIONS BROWN TO THE NEAREST METER
To convert meters to feet multiply by 2.2046
To convert feet to meters multiply by 0.3048

LEGEND

National Forest Boundary
Non-Forest Service Land within
Proclamation Boundary as of 1985
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Reliable
Surveyed Location Approximate
Unsurveyed Location

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Approximate Road
Approximate Trail

US Highway
State Highway
County Road
Forest Highway
Forest Road
Forest Trail



PONY BUCK PEAK WEST, CALIF.
1981
N4015-W12307.5/7.5
632-3C
REVISED 1983